CANADA

DEPARTMENT OF THE ENVIRONMENT

INLAND WATERS DIRECTORATE
WATER QUALITY BRANCH

INDUSTRIAL WATER RESOURCES OF CANADA

WATER SURVEY REPORT NO. 15

THE HUDSON BAY, LABRADOR AND ARCTIC DRAINAGE BASINS, 1959-1965

BY
J. F. J. THOMAS AND R. M. GALE

RÉSUMÉ EN FRANCAIS

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Water Survey Report 15 was prepared by the Water Quality Branch of Environment Canada, formerly the Industrial Water Section, Mines Branch, Department of Energy, Mines and Resources.

ABSTRACT

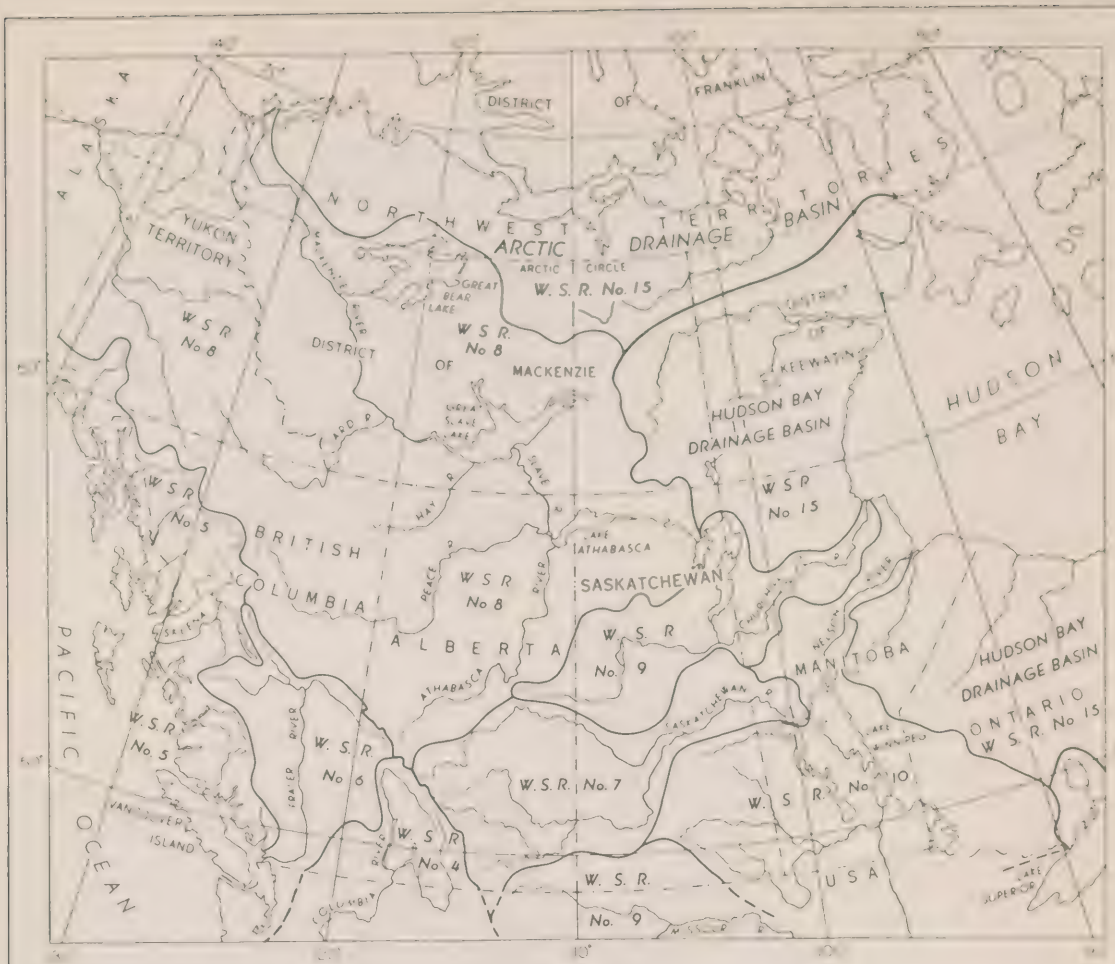
This, the final part of the series of Water Survey Reports of the industrial water resources of Canada, deals with the Hudson's Bay, Labrador, and Arctic drainage basins. Chemical analyses of waters from 216 stations are recorded, with descriptions of 49 municipal and 17 other water supplies. Records between 1947 and 1961 are included. The geology of the drainage basins, the procedures used and the analytical techniques employed are summarized briefly. Two maps of the areas dealt with are supplied.

The waters vary widely in hardness; mineral content is mainly alkaline earth bicarbonates; alkalies, sulphates and chlorides are for the most part low.

RÉSUMÉ

Ce rapport, la dernière partie dans la série des rapports émanant des Relevés hydrologiques concernant les ressources en eau au point de vue industriel, traite des bassins de drainage de la Baie d'Hudson, du Labrador et de l'Arctique. Des analyses chimiques de l'eau à 216 stations sont enregistrées, avec descriptions à 49 sources d'approvisionnement municipales ou autres. La géologie des bassins de drainage, les procédés et analyses techniques utilisés sont résumés brièvement. Deux cartes des régions étudiées apparaissent dans le rapport.

Les eaux varient grandement en crudité; la teneur en minéraux consiste principalement en bicarbonates de terre alcalins; la teneur en alcalis, sulfates et chlorures est basse dans la plupart des cas.



LEGEND

W. S. R. No. 4 ..... Water Survey Report No 4, Columbia River Drainage Basin, Mines Branch Rept. No. 838, published 1953

W. S. R. No. 5 ..... Water Survey Report No. 5, Skeena River Drainage Basin, Vancouver Island, and Coastal Areas of British Columbia, Mines Branch Rept. No. 839, published 1953

W. S. R. No. 6 ..... Water Survey Report No. 6, Fraser River Drainage Basin; Mines Branch Rept. No. 842, published 1954

W. S. R. No. 7 ..... Water Survey Report No. 7, Saskatchewan River Drainage Basin; Mines Branch Rept. No. 849, published 1956

W S R No 8 ..... Water Survey Report No 8, Mackenzie and Yukon Rivers Drainage Basins in Canada Mines Branch Report No 856, published 1957

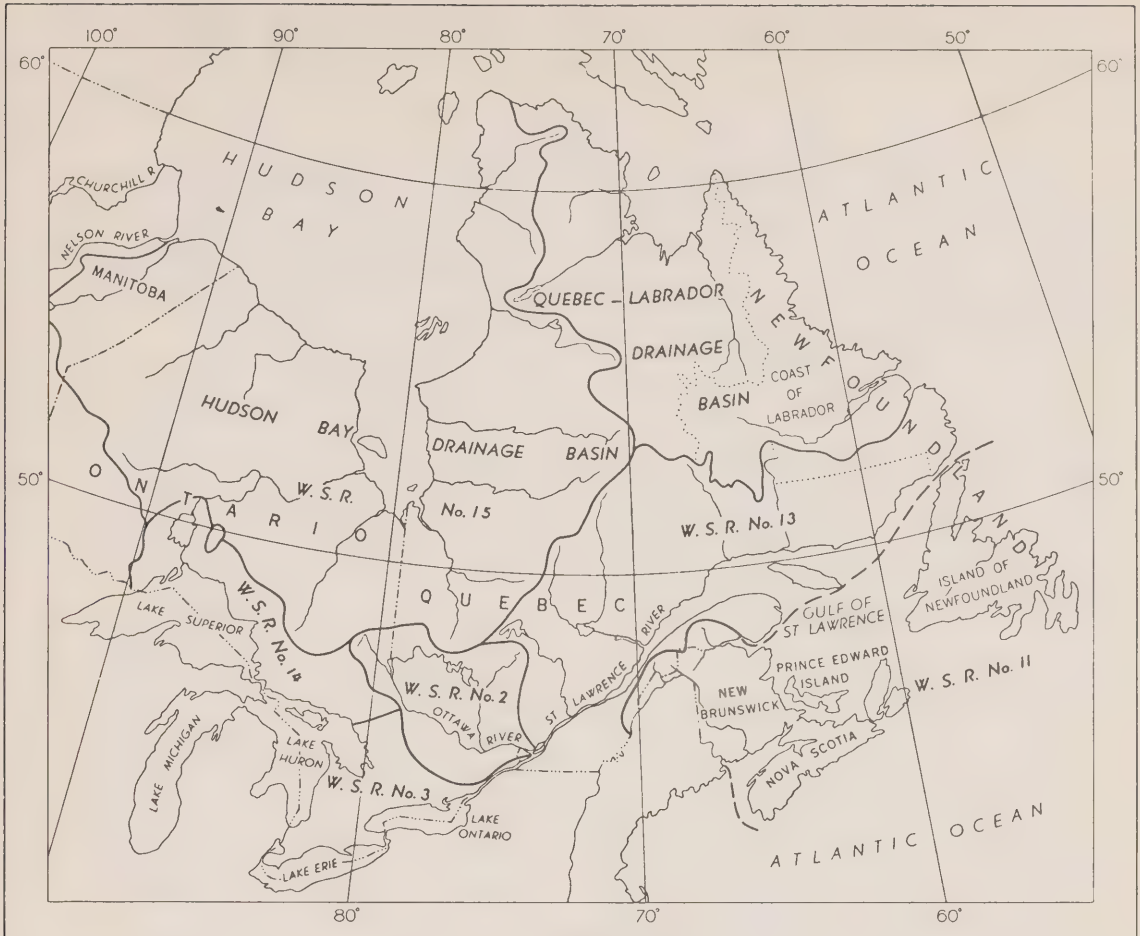
W. S. R. No. 9 ..... Water Survey Report No 9, Churchill River and Mississippi River Drainage Basins in Canada, Mines Branch Report No. 858, published 1957

W S R No 10 ..... Water Survey Report No. 10, Nelson River Drainage Basin in Canada, Mines Branch Report No. 861, published 1957

SCALE OF MILES

100 0 100 200 300 400 500

FIGURE 1. REFERENCE MAP OF DRAINAGE BASINS IN WESTERN CANADA



LEGEND

W. S. R. No. 2 . . . . Water Survey Report No. 2, Ottawa River Drainage Basin; Mines Branch Report No. 834, published 1952

W. S. R. No. 3 . . . . Water Survey Report No. 3, Upper St. Lawrence River- Central Great Lakes Drainage Basin in Canada; Mines Branch Report No. 837, published 1954.

W. S. R. No. 11 . . . . Water Survey Report No. 11, The Atlantic Provinces, and the St. John River Drainage Basin in Canada, 1954-56; Mines Branch Report No. 864, published 1960.

W. S. R. No. 13 . . . . Water Survey Report No. 13, Lower St. Lawrence River Drainage Basin in Canada, 1956-1960; Mines Branch Report No. 869

W. S. R. No. 14 . . . Water Survey Report No. 14, Upper Great Lakes Drainage Basin in Canada, 1959-1963; Mines Branch Report No. 870

W. S. R. No. 15 . . . Water Survey Report No. 15, Hudson Bay, Labrador and Arctic Drainage Basins; 1959-1963

G. S. C.

Miles
0 400

FIGURE 2. REFERENCE MAP OF DRAINAGE BASINS IN EASTERN CANADA

Chemical Quality of Surface and Municipal Water Supplies in the Hudson Bay, Labrador and Arctic drainage basins of Canada, 1959 - 1965

INTRODUCTION

This is the fifteenth and final report of the current Water Survey series, which presents data on the chemical quality of surface and municipal water supplies available for industrial and domestic use in Canada.

Water Survey Report 1[1] introduces the series and outlines the aim, scope and general procedure of the country-wide survey. It also provides general information, tables and graphs for use in interpreting the analytical results of subsequent reports. The studies on specific areas or drainage basins (see Figures 1 and 2) are reported in detail in Reports 2 to 11 and 13 to 15. Report 12[2] and its supplement[3] show tabulated information on water quality at army installations in Canada.

Since these studies commenced in 1947-48, coverage of the chemical quality of major Canadian surface and municipal waters, coverage of areas, and the amount of information on the chemical quality of individual waters, have been broadened in response to the increasing demands of industry and the growing appreciation of water's importance to the Canadian economy. Water quality studies are continuing with increased scope and intensity. Surveys designed to obtain long-term (5-10 years) or continuing information on major surface waters are under way, and data from these and other specific areas surveys will be published.

The present report, No. 15, which completes the initial coverage of Canadian drainage basins, gives the results of studies begun in 1947 in relatively inaccessible areas, namely:

i) drainage into Hudson Bay, excluding the Nelson, Saskatchewan and Churchill River systems, which are covered in Reports 8 and 10;

ii) drainage into the Atlantic Ocean from Labrador and Northern Quebec – the Labrador drainage basin;

iii) drainage into the Arctic Ocean, excluding the Mackenzie River system, which appears in Report 8, but including some data for water quality on the Arctic Islands.

The method of presentation in this report is essentially the same as in the previous studies. No attempt is made to discuss in detail all of the information obtained during the survey, but some statistics on water quality and use are presented and briefly discussed. As before, the data are reported in sufficient detail for the user to interpret and analyse them for his particular purpose.

Table I shows the relationship of area and population (1961) for the basins covered by this report and for other basins or areas studied.

Table II provides detailed analytical results obtained on surface waters during 1947-65. Most of these are for 1959-65, but occasional samples have come from various areas since 1947, usually through special studies, such as the data on Ellesmere Island waters.

Table III reports the chemical quality of most waters, including groundwater, as supplied by organized municipal systems within the basins during 1961. Some data obtained at later dates are also included. The municipalities are listed alphabetically in Appendix B, and their locations are shown in Figures 3 and 3A (jacket maps), where they are classified as to water hardness. The systems or plants and their operations in the years pertinent to the study are also described.

Table IV reports on the operations and the quality of waters supplied by private systems in a number of small townsites and communities, particularly in the Hudson Bay drainage area. These small communities are listed in Appendix C, but only a few are shown on the maps inside the back cover.

Table V summarizes the information available on the number of water systems, the character of water sources,

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[1] Dept. of Energy, Mines and Resources, Mines Branch. *Scope, procedure, and interpretation of survey studies.* Water Survey Report No. 1, Mines Branch Report No. 833, Ottawa, 1953. 69pp.

[2] Dept. of Energy, Mines and Resources, Mines Branch. *Water quality at some Canadian military establishments, 1956-57.* Water Survey Report No. 12, Mines Branch Report No. 865, Ottawa, 1959. 125pp.

[3] Dept. of Energy, Mines and Resources, Mines Branch. *Water quality at some Canadian military establishments, 1959-62. Supplement to Water Survey Report No. 12.* Mines Branch Report No. 872, Ottawa, 1963. 56pp.

the type of water treatment, if any, and the population served by these systems in 1961. Additional statistics, especially on the hardness of municipal waters, are presented in Table VI.

Many people co-operated in the preparation of this report. Grateful acknowledgement is extended to them, and particularly for help in northern areas that were not accessible by road.

TABLE I

AREA AND POPULATION DISTRIBUTION

TABLE 1

Area and Population in the Drainage Basins of Central Canada in 1961

	Approximate area drained, square miles in (Per cent of area drained in)							
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Hudson Bay	[illegible]	[illegible]	221,862[a]	[illegible]	[illegible]	[illegible]	[illegible]	316,441
(This report)		(34.8)	(53.8)	(12.1)	(0.8)	115.33		
Labrador	1,116,28[illegible]	154,758	0	0	0	0	0	256,126
(This report)	(99.2)	(26.9)	–	–	–	–	–	
Arctic	[illegible]	0	0	0	0	805,983[b]	7,246	813,229
(This report)						(61.8)	(3.5)	
ST. LAWRENCE RIVER SYSTEM — Lower St. Lawrence River	11,200	189,600	0	0	0	0	0	200,800
(W.S. Report No. 13)	(9.8)	(31.9)	–	–	–	–	–	
Upper St. Lawrence River-Central Great Lakes	0	0	55,200	0	0	0	0	55,200
(W.S. Report No. 3)	–	–	(13.4)	–	–	–	–	
Ottawa River	0	38,560	20,675	0	0	0	0	59,235
(W.S. Report No. 2)		(6.5)	(5.0)	–	–	–	–	
Upper Great Lakes	0	0	67,800[d]	0	0	0	0	67,800[d]
(W.S. Report No. 14)	–	–	(16.4)	–	–	–	–	
Nelson River[c]	0	0	47,045	124,355	47,900	0	0	219,300
(W.S. Report No. 10)	–	–	(11.4)	(50.4)	(19.0)	–	–	
Churchill River[d]	0	0	0	34,680	66,535	–	–	–
(W.S. Report No. 9)	–	–	–	(14.1)	(26.5)	–	–	–
Total province or territory	112,826	594,860	412,582	246,515	251,700	1,304,903	207,076	–
Per cent of Canada	2.92	15.44	10.71	6.4	6.6	33.9	5.4	

1,780,047

383,035

a - Areas and populations adjusted to place Long Lake and Ogoki Diversions in the Hudson Bay drainage basin.
b - 541,083 square miles in Arctic Archipelago.
c - Does not include Saskatchewan River drainage basin - *see* W.S. Report No. 10.
d - Churchill River drainage basin not included in Hudson Bay basin - *see* W.S. Report No. 9.

TABLE 1

Area and Population in the Drainage Basins of Central Canada in 1961

Estimated population in basin area in 1961 (Per cent of total Province population in basin)									Percentage of basin area population in						
abrador	Quebec	Ontario	Manitoba	Saskatchewan	Northwest Territories	Yukon Territory	Total		Labrador	Quebec	Ontario	Manitoba	Saskatchewan	Northwest Territories	Yukon Territory
0	102,702 (7.0)	119,114[a] (1.9)	3,693 (0.4)	0	1,979 (8.7)	0	227,488		0	45.1	52.4	1.6	0	0.9	0
11,727 (86.7)	5,040 (0.1)	0 –	0 -	0 –	0 –	0 –	16,767	251,173	70.0	30.0	0	0	0	0	0
0 –	0 –	0 –	0 –	0 –	6,918 (30.1)	0 –	6,918		0	0	0	0	0	100	0
1,807 (13.3)	4,464,750 (84.9)	0 –	0 –	0 –	0 –	0 –	4,466,557		0.04	99.96	–	–	–	–	
0 –	0 –	5,001,103 (80.2)	0 –	0 –	0 –	0 –	5,001,103	11,095,846	0	0	200	0	0	0	0
0	585,800 (11.1)	654,229 (10.5)	0	0	0	0	1,240,029			47.1	52.9	0	0	0	0
0 –	0 –	388,157[a] (6.2)	0 –	0 –	0 –	0 –	388,157		–	–	100	–	–	–	–
0 –	0 –	73,489 (16.2)	– –	– –	0 –	0 –	73,489		– –	– –	– –	– –	– –	– –	– –
– –	– –	–				-	-								
13,527	5,229,211	6,236,092	921,686	925,181	22,998	14,628									
otal Canada – 18,238,247															

THE DRAINAGE BASINS

This survey covers an area of 1,800,000 square miles, most of which lies in the Canadian Shield. A large part of it is subject to permafrost. It is often treeless and vegetation is sparse.

A low relief, generally less than 2,000 feet above sea level, is the norm, with few hills or ridges more than 100 to 200 feet above surface level. There are places, however, with a more rugged topography. In Labrador, the Torngat Mountains rise as high as 3,500 to 5,000 feet above the sea, and the Mountains of Baffin Island reach 6,000 to 7,000 feet.

Glaciation has produced rounded rock outcrops and rocky ridges separated by areas of glacially-deposited sand and gravel. Countless lakes of all sizes and outlines show how glaciation disorganizes the drainage.

The Shield consists of a wide variety of volcanic, sedimentary, and granitic rocks commonly metamorphosed to gneiss and magmatite. There are extensive areas of unaltered sedimentary rocks in northern Baffin Island, the Thelon Plain, south of Lake Athabasca, and east of Great Bear Lake. In many places masses of granite intrude through the older metamorphic complexes.

HUDSON BAY DRAINAGE BASIN

This basin includes sections of the Northwest Territories, Manitoba, Ontario and Quebec, with a total area of approximately 680,000 square miles. The Churchill and Nelson River systems are excluded, but are covered in Water Survey Reports 9 and 10 respectively.

The Hudson Bay Lowlands are a low swampy plain sloping gently from the shores of Hudson and James Bays. They are underlain mainly by sedimentary strata ranging in age from Ordovician to Mesozoic, although an outlier of the Shield forms the Sutton Ridge which rises 500 feet above the general surface. The lignite deposits of the area are being considered as a source of fuel for power generation.

The basin is drained by the following major rivers, which are given here with their approximate lengths: Quebec – Broadback (220 miles), Eastmain (375), Fort George (520), Harricanaw (250), Nottaway (400), and Rupert (380); Ontario – Albany (610 miles), Attawapiskat (465), Moose (340) (and its tributaries Abitibi (340), Mattagami (275), and Missinaibi (270)), Severn (420), and Winisk (400); Manitoba – Hayes (300 miles); Northwest Territories – Dubawnt (580 miles), Kazan (450), Seal (240), Thelon (350), and Thlewiaza (180).

Population is sparse in the northern areas, except for centres such as Moosonee. The southern section of the basin is more heavily populated largely because of the mining towns in the Timmins area.

Natural vegetation in the basin varies from Alpine Tundra in the north, to Subarctic Forest in the central area, to a Boreal Forest region south of James Bay.

LABRADOR DRAINAGE BASIN

The basin drains an area of 105,000 square miles in Labrador and 155,000 square miles in northeast Quebec, for a total of 260,000 square miles.

The Ungava region is underlain by granite gneiss, granite and allied rocks of Precambrian age. Labrador and the Labrador Trough contain altered rock of the same age. The Trough, which is about 60 miles wide, is composed of Late Precambrian sedimentary and volcanic strata, and sills and dykes of gabbro. Included in the area are the important Quebec-Labrador iron ore deposits. The rocks within this belt are folded and faulted.

Notable rivers draining the basin, and their approximate lengths, are: George (365 miles), Hamilton (210), Larch (300), and Leaf (295).

Population is sparse and scattered in this basin, with minor concentrations along the coast of Labrador and in the mining centres. These small, non-dominant communities rely mainly on fishing and trapping for their livelihood, while towns like Wabush, Labrador City and Schefferville are iron ore centres.

The natural vegetation varies from Alpine Tundra in northern parts, to Subarctic Forest in the central region and to Boreal Forest in the south.

ARCTIC DRAINAGE BASIN

The land area of this huge region is estimated at 820,000 square miles. The Arctic Islands stretch from Hudson Bay to the northern tip of Ellesmere Island, a distance of some 1,500 miles. Their greatest extent from east to west is approximately 1,000 miles.

The exposed formations of the Arctic Archipelago are successively younger from southeast to northwest. In the southeast, rocks of the Precambrian Age rise to a height of 6,000-7,000 feet. On Baffin Island, the largest in the Archipelago, a high mountain range extends along the east coast. The east and south coasts, the lowlands north of Fury and Hecla Strait, and probably much of the interior of Baffin Island, are underlain by crystalline rocks of Precambrian Age. Granite intrusions, gneiss and schist make up the greater part of the east coast. The rocks of the south coast include abundant crystalline limestone.

Along the northwest border of the main Precambrian area, the older rocks are overlain first by isolated remnants of lower Paleozoic strata and, farther north in the Queen Elizabeth Islands, by an almost continuous succession ranging in age from Cambrian to Cretaceous. The Arctic Coastal Plain, extending from Mackenzie Delta to Meighen Island, is composed of Tertiary sedimentary rocks.

The shorelines of Devon and Parry Islands rise in cliffs of 400 to 700 feet. An ice-capped tableland in eastern Devon Island rises abruptly from the sea to an average height of about 3,000 feet, and a very large iron deposit occurs at Mary River, northern Baffin Island.

Major lead-zinc deposits occur on Little Cornwallis Island and northern Baffin Island. Oil and gas discoveries have resulted from massive exploration program by industry since 1969.

The major rivers on the mainland, and their approximate lengths, are: Anderson (430 miles), Bache (605), Coppermine (525), and Horton (275).

Population is sparse throughout the Arctic drainage basin. There are many small settlements on the Arctic Islands and the mainland coast.

SURVEY PROCEDURE

The sampling methods and survey procedure, which are essentially the same throughout the Water Survey series, are described in detail in Report 1 (Mines Branch Report 833).

Regular sampling stations were established and operated during 1958 and 1959 in the Hudson Bay drainage basin. The stations were chosen, where possible, to give representative samples of the larger river and lake waters. They are listed in Appendix A and are shown in Figure 3. In addition to the monthly and quarterly sampling, attempts were made to obtain samples at annual periods of high and low water.

A similar procedure was followed in the Labrador basin. Because of the twin factors of inaccessibility and lack of population, regular sampling was not possible in the most northerly areas, including the Arctic Islands. Many random samples were collected at key locations by survey parties and other research groups working in these areas during the survey period.

In the south and east of the Hudson Bay drainage basin, field work was undertaken between 1947 and 1960 for the collection of samples of municipal and surface waters. Sometimes the samples were partially analysed in the field. Spot samples were collected at many of the stations for comparison with the regular ones.

The survey also covered municipal water supply systems and small, organized systems supplying small communities and townsites in the basins during 1947-65.

Chemical analyses of samples from surface water stations (Figures 3 and 3A) are tabulated in Table II. The stations are numbered as follows: Hudson Bay drainage basin, 1 to 142; Arctic drainage basin, 1A to 54A; Labrador drainage basin, 1B to 20B.

Chemical analyses of municipal water supplies are shown in Table III, and chemical analyses and plant data for small communities and townsites in Table IV. Results of field tests appear in parentheses beside the laboratory analyses in Tables II and III. A comparison of these results indicates certain qualities *in situ* and any significant changes in chemical quality which may have occurred during storage or shipment, or both.

ANALYTICAL PROCEDURE

The analytical methods and techniques used in this study are similar to those applied in Water Survey Reports 11 and 13. The basic analytical techniques and interpretation of data are discussed in Report 1. Standard procedures for water analysis published by the American Public Health Association and by the American Society for Testing and Materials were used in most cases, but close co-operation with committees of those societies and with the Mineral Processing Division, Mines Branch, sometimes led to the use of newer techniques and procedures.

The analytical work was carried out mostly from 1957 to 1959, although a number of municipal water samples were collected and analysed in later years. The methods used during the period of this report are briefly as follows.

Usually within four to seven days of collection, water samples were analysed in the laboratory for those constituents that could significantly change in storage. Longer storage sometimes resulted from unforeseen circumstances, such as a delay in shipping. In Tables II, III, and IV, the first figure listed under the storage period is the number of days from sampling until the immediate tests were begun, and the second figure is the number of days from sampling until the remaining tests were started.

IMMEDIATE TESTS

pH – measured by pH meter.

Specific Conductance – measured with a Wheatstone bridge, and a pipette-type conductivity cell.

Colour – by visual comparison of the supernatant or filtered water against Hazen colour standards in a commercial comparator.

Turbidity – the Jackson candle turbidimeter was used for high turbidity waters, the Hellige turbidimenter for low to medium turbidity.

Total Hardness – by titration with a standard solution of sodium ethylenediaminetetraacetic acid (EDTA), using Erichrome Black T as visual endpoint indicator.

Calcium – by titration with standard EDTA, using murexide or, after February 13, 1959, calcon as visual endpoint indicator.

Magnesium – calculated from the values found by titration for total hardness and for calcium.

Alkalinity – by titration with standard (0.02N) sulphuric acid, employing a potentiometric endpoint. After February 11, 1959, alkalinity was determined by a technique developed in the Branch's laboratories, which eliminates errors caused by variations in the titre with total alkalinity concentrations.

Oxygen consumed by Permanganate ($KMnO_4$) – by measurement of the amount of a standard potassium permanganate solution reduced by a known amount of water at boiling temperature (100°C) in one hour. The test is, to some degree, a measure of the organic matter in the water sample.

Copper and Zinc – by periodic spot tests on the supernatant water with dithizone.

Ammonia – by direct Nesslerization of the supernatant water with visual comparison against prepared standards.

TESTS USUALLY MADE AT A LATER DATE

Aluminum – determined spectrophotometrically by the aluminon method until about August, 1957; since then by a mixed ferron-orthophenathroline procedure.

Total Iron and Total Manganese – after July 28, 1959, separate samples of all groundwaters were collected to determine total iron and total manganese; these separate samples, assumed clear when drawn, were acidified in the sample container and the total iron determined by the a.a. dipyridyl procedure; the total manganese was determined by the periodate method or, after November 26, 1958, by the persulphate method or both.

Dissolved Iron and Dissolved Manganese – determined on the supernatant or filtered portions of all waters by the same procedures as used for total iron and total manganese.

Copper and Zinc – when shown to be present in significant amounts by the above spot test, were determined until September, 1959 by the dihydroxyethyldithiocarbamate and dithizone procedures, respectively. The neocuproine procedure was used to determine copper from May 1963 to October 1963; since then a zinc dibenzyldithiocarbamate procedure has been used. The zincon method was employed for zinc until June 1963; since then the dithizone procedure employing photometric colour detection was used.

Sulphates– since March 1956, by titration with barium chloride, using thorin as a visual endpoint detector.

Chloride – by titration with a standard mercuric nitrate solution, using microburettes and visual endpoint detection. Since May 6, 1963, most samples have been potentiometrically titrated with standard silver nitrate solution using a silver-potassium sulphate electrode system as indicator. The mercuric nitrate method is still used for very low chloride content waters and periodically as a check on the potentiometric method. From August, 1964, chlorides have been determined using an automated ferric thiocyanate method.

Fluoride – by the standard zirconium-alizarin procedure until December 12, 1960, distillation being employed only when interferences were present. Since then fluoride has been determined by the SPADNS procedure, with distillation to isolate fluoride whenever interference is evident.

Nitrate – until about August 13, 1961, nitrate ion was determined by the standard phenoldisulphonic-acid method with visual comparison against standards in Nessler tubes. High nitrate waters were checked by the brucine method with comparison being made in a spectrophotometer. Since November, 1965, nitrate ion has been determined by a Technicon Auto Analyzer, using nitrate reduction technique. Between August 13, 1961 and November 4, 1963, the brucine method was routinely used on most waters, but since November, 1963, a modification of the ultra-violet absorption procedure for nitrates has been used. The ultra-violet absorption method is rapid and sensitive if proper attention is given to interference by organic matter in the water.

Phosphate – determination of total and/or dissolved phosphate was begun routinely on selected waters in late 1960, with the standard procedure employing stannous chloride as reductant. Since July 11, 1963 a modification of this method has employed bismuth nitrate to increase the sensitivity of the test, with amino naphthol sulphonic acid as the reductant. From May, 1965, a Technicon Auto Analyzer has been used with amino naphthol sulphuric acid as the reductant.

Silica – the standard spectrophotometric procedure for silica employing reduction with stannous chloride was used.

no attempt being made to solubilize any silica present in a form not measured by this procedure. After May, 1965, silica was determined with a Technicon Auto Analyzer using amino naphthol sulphuric acid.

Boron – was determined only on major surface-water supplies once or twice yearly, usually at or near times of high and low flow; the standard titration procedure with added mannitol was employed.[1]

Suspended Matter and Residue on Evaporation – To permit increase coverage on waters, the determination of suspended matter and residue on evaporation, as well as tests for copper, zinc, iron, aluminum and manganese, were omitted on two out of three samples received from the monthly sampling stations. Suspended matter was determined only when the turbidity was 3 units or over. It is considered that sufficient information is still obtained from this abbreviated analysis to show if significant seasonal variation is occurring.

Calculated *averages* for water quality at monthly sampling stations are omitted from this report. Such averages mean little if the water quality varies widely or if adequate discharge records are not available. Averages should be determined from numerous samples weighted as to discharge.

Saturation Index, Stability Index and Per Cent Sodium are reported for all waters. Interpretation of these calculated values has already been discussed in Water Survey Reports Nos. 1, 10 and 12. In brief, per cent sodium when correlated with total mineralization and boron content indicates the suitability of a water for irrigation.

Since June 6, 1962 a *Sodium Adsorption Ratio (SAR)* has also been calculated. This ratio,

$$\frac{\text{Na (epm)}}{\frac{\sqrt{\text{Ca} + \text{Mg (epm)}}}{2}}$$

the result of work by the U.S. Dept. of Agriculture, is a revised form of the above sodium-percentage concept and is related to the experimentally determined adsorption of sodium by soils. It is considered to be more directly significant than the per cent sodium value for estimating the results of using a water for irrigation. However, its use is limited to considering base-exchange reactions in soils and evaluation of irrigation waters whereas the per cent sodium is useful also in plotting quality data and direct comparison of analytical data. Both values are reported in this report, the per cent sodium partly to maintain continuity throughout the series[2],[3],[4].

The Saturation and Stability Indices are useful for assessing the corrosive tendency of a water. Care, however must be exercised in interpreting these indices since many other factors are important to the rate and extent of corrosion in aqueous solution. For example, when calcium hardness is less than 10 ppm as $CaCo_3$, and the alkalinity correspondingly low, there is no pH at which calcium carbonate can precipitate and the indices–which are based on the carbon dioxide-pH-calcium carbonate equilibrium–then have little significance. This is the case with many of the very soft and low-mineralized waters of the Upper Great Lakes basin. These indices and the free carbon-dioxide contents are calculated and reported for each water at the temperature of analyses. They change significantly with changing temperature. The carbon-dioxide content of a cold, deep well water may be markedly different from the content of the same water at laboratory temperature.

Dissolved Oxygen was not determined on surface waters at sampling because it varies so widely with location, depth and temperature; in most rivers the dissolved oxygen content, unless depleted by algae growth or pollution, is always near saturation. A survey of the dissolved oxygen content or B.O.D. (Biochemical Oxygen Demand) of a river requires a detailed and specially designed survey of the river.

Elements other than those reported in this survey are in solution in trace amounts in surface and groundwaters. Some of these have greatly increased in importance, but lack of personnel and laboratory facilities did not permit their routine determination in this study. Separate samples, filtered and acidified at the time of collection, are required if an accurate figure is to be obtained for trace elements, such as barium, silver, cobalt and nickel. These requirements limit the location of sampling stations and raise difficulties in obtaining sample collectors; spectrographic analyses of residues for these and other trace elements are done from time to time for special studies.

Modifications in techniques and new equipment are continually being tested in the laboratory; in some cases to increase the speed of analysis without loss of accuracy or precision, and in other cases to improve the sensitivity and precision of a method.

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TABLE II

CHEMICAL ANALYSES OF SURFACE WATERS

TABLE II

Chemical Analyses of Surface Waters in the Hudson Bay Drainage Basin

(In parts per million)

No.	Date of collection	Storage gained (Days)	Stream discharge (Second-feet): On sampling date	Stream discharge (Second-feet): Monthly mean	Water temperature (°F.)	Oxygen consumed by ($KMnO_4$)	Carbon dioxide (calculated) (CO_3)	pH	Colour (Hazen) (Units)	Turbidity (Units)	Suspended matter: Loss at 105°C.	Suspended matter: Ignited at 550°C.	Residue on evaporation dried at 105°C. (Dissolved solids): P.P.M.	Residue on evaporation dried at 105°C. (Dissolved solids): Tons per acre-foot	Residue on evaporation dried at 105°C. (Dissolved solids): Tons per day	Loss on ignition at 550°C.	Specific conductance at 25°C.	Calcium (Ca)
1	[illegible]	[illegible]	[illegible]		47		2	6.8	8	[illegible]								
* Total and dissolved																		
2	[illegible]	[illegible]	[illegible]		48		2	6.8	8	[illegible]								
* Total and dissolved																		
3	[illegible]	[illegible]	[illegible]		48		2	6.8	25	3.8								
* Total and dissolved																		
4	June 17	12:20	30,000e		48		2	6.7	25	2								
5	July	No sample taken																
6	Aug. 24	[illegible]	[illegible]		54	0.4	4	6.3	30	0.4								
* Total and dissolved																		
e estimated																		
7	Aug. 24/60	[illegible]	[illegible]†	42,700†	55	0.4	3	5.8	30	0.8								
† At gauge Lat. 55°17' Long. 77°35'; drainage area 16,000 sq. miles																		
8	Aug. 18/60	[illegible]	3,850		55	0.8	3	6.3	30	0.8								
9	June 13/60	25:29	85,176		54		2	6.7	25	0.4								
10	June 22	20:28	53,175		57		3	6.4	25	0.8								
11	Aug.	No sample taken																
12	Sept. 24	51:28	42,557		49	0.4	2	6.7	35	0.4								
* Sampled just below junction of Sakami River																		
13	Aug. 24/60	33:40	104,700		59	0.4	3	6.3	35	1								
* Drainage area at Lat. 53°45' 20", Long. 78°34' 20", 32,500 sq. miles																		
14	Sept. 24/60	52:28	5,175		51	0.2	4	6.4	45	0.8								
* Total and dissolved																		
15	July 24/60	18:26	15,200†		61		3	6.5	35	2								
16	Aug. 24	33:40	21,000		58	0.5	3	6.5	40	2								
* Sampled above junction of Cartier River																		
† Low water																		
** Total and dissolved																		
17	June 19/60	25:29	50†		52		2	6.6	70	40								
† Low water																		
* Total and dissolved																		

TABLE II – (Continued)

Chemical Analyses of Surface Waters in the Hudson Bay Drainage Basin

(In parts per million)

Magnesium (Mg)	Iron (Fe) Total	Iron (Fe) Dissolved	Manganese (Mn)	Aluminum (Al)	Copper (Cu)	Zinc (Zn)	Alkalis Sodium (Na)	Alkalis Potassium (K)	Ammonia (NH_3)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulphate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Silica (colorimetric) (SiO_2)	Phosphate (PO_4)	Boron (B)	Hardness as $CaCO_3$ Non-carbonate	Hardness as $CaCO_3$ Total	Sum of constituents	Per cent sodium	Saturation index	Stability index	No.
at 56°43' N – 75°22' W – QUEBEC																									
0.2	0.16	0.00	0.00*	0.04	0.0	0.0	0.8	0.2	0.0	0.0	6.6	1.3	0.5	0.0	0.1	1.3	0.04	.....	0.0	5.4	9.6	22	-3.5	14	1
at 56°12' N – 75°14' W – QUEBEC																									
0.1	0.03	0.00	Trace*	0.02	0.0	0.0	1.0	0.2	0.0	0.0	7.3	0.7	0.9	0.0	0.1	1.2	0.02	.....	0.3	6.3	10.1	25	-3.3	14	2
at 55°58' N – 76°35' W – QUEBEC																									
0.2	0.13	0.02	0.00*	0.0	0.0	0.0	1.0	0.3	0.1	0.0	7.3	1.1	1.1	0.0	0.1	2.5	0.04	.....	0.9	6.9	12.3	23	-3.3	14	3
above junction of DENYS RIVER at 55°09' N – 77°20' W – QUEBEC																									
0.2	0.19	0.02	0.00*	0.0	0.0	0.0	0.8	0.3	0.1	0.0	6.2	1.2	0.7	0.0	0.1	1.9	0.01	.....	0.0	4.9	10.0	24	-3.7	14	4
0.1	0.13	0.04	0.01*	0.05	0.0	0.0	0.5	0.3	.....	0.0	4.3	2.7	0.5	0.0	0.0	1.5	0.0	.....	1.1	4.6	9.4	17	-4.3	15	5 6
near GREAT WHALE RIVER MISSION at 55°16' 30" N – 77°34' W – QUEBEC†																									
0.3	0.14	0.04	0.00*	0.03	0.0	0.0	0.6	0.3	.....	0.0	1.6	2.2	2.2	0.0	0.0	1.6	0.0	.....	3.7	5.0	9.5	19	-5.2	16	7
at 54°59' 36" N – 77°03' 30" W – QUEBEC																									
0.4	0.12	0.0	0.00*	0.02	0.0	0.0	0.8	0.4	.....	0.0	3.9	4.2	0.9	0.0	0.1	2.0	0.0	.....	2.7	5.9	12.4	21	-4.3	15	8
at 53°40' 42" N – 76°47' 24" W – QUEBEC																									
0.3	0.11	0.00	0.0	0.02	Trace	0.0	0.7	0.3	0.2	0.0	4.3	0.4	0.7	0.0	0.1	2.5	0.05	.....	0.3	3.8	5.9	26	-4.1	15	9
0.1	0.08	0.04	0.0	0.04	0.0	0.0	0.7	0.4	0.0	0.0	3.4	1.5	0.4	0.0	0.2	1.9	0.04	.....	1.1	3.9	8.4	24	-4.4	15	10 11
0.3	0.12	0.00	0.0	0.03	Trace	0.0	0.9	0.3	.....	0.0	4.6	2.9	0.6	0.0	0.1	2.6	0.0	.....	0.9	4.7	11.4	27	-3.9	15	12
near FORT GEORGE at 53°43' 30" N – 78°31' W – QUEBEC†																									
0.3	0.18	0.06	0.0	0.0	0.0	0.0	0.6	0.3	.....	0.0	3.7	1.7	0.5	0.0	Trace	2.4	0.00	.....	2.0	5.0	9.2	19	-4.4	15	13
near mouth at 53°39' N – 76°39' W – QUEBEC																									
0.9	0.16	0.00	0.0*	Trace	0.0	0.0	1.2	0.5	.....	0.0	6.5	2.7	1.1	0.0	0.1	2.1	0.00	.....	0.4	5.7	12.6	28	-3.8	14	14
at 53°45' N – 76°59' W – QUEBEC																									
0.3	0.16	0.04	0.0**	0.0	0.0	0.0	0.9	0.3	0.0	0.0	4.9	1.6	0.6	0.0	1.2	2.8	0.03	.....	1.8	5.8	12.0	24	-4.0	15	15
0.3	0.17	0.08	0.0**	0.09	0.0	0.0	0.7	0.3	.....	0.0	5.1	2.7	0.5	0.0	0.1	2.8	0.0	.....	0.9	5.1	11.6	20	-4.1	15	16
near mouth at 53°44' N – 76°57' W – QUEBEC																									
1.8	2.4	0.30	Trace†	0.0	Trace	0.0	4.0	1.2	.....	0.0	17.2	3.3	3.8	0.0	0.2	5.9	.....	.....	1.4	14.9	31.6	34	-3.1	13	17

TABLE II – (Continued)

Chemical Analyses of Surface Waters in the Hudson Bay Drainage Basin

(In parts per million)

No.	Date of collection	Gauge height (Feet)	Stream discharge (Second-feet) On sampling date	Stream discharge (Second-feet) Monthly mean	Temperature (°C)	Oxygen consumed by $KMnO_4$	Carbon dioxide (calculated) (CO_2)	pH	Suspended matter		Residue on evaporation dried at 105°C. (Dissolved solids)						
1	[illegible]		49:05	6,550	.....												
2	[illegible]		No sample taken														
3	Apr. [illegible]		13:38	4,750	.....	35	.....									21.8	

STATION NO. 11 – EASTMAIN RIVER*

4	June 30/59	15:27	35,446†	(June 26)	60	6.8	11	6.1	40	4	8.5	4.6	16.8	0.433	1,096	5.2	18.0	1.4
5	July 15	9:14	35,946	(July 18)	66	8.0	2	6.3	40	2	.....	.....	22.0	0.566	1,433	14.8	13.6	1.1
6	July 30	19:27	33,400	(July 29)	67	7.9	3	6.3	40	2	.....	.....	27.2	0.657	1,662	14.0	11.6	0.9
7	Aug. 15	14:24	27,244	(Aug. 22)	65	9.9	2	6.3	50	0.8	.....	.....	31.2	0.643	1,627	24.8	14.4	1.2
8	Aug. 31	19:32	18,678	(Sept. 1)	60	9.1	2	6.4	35	0.4	.....	.....	28.8	0.598	1,431	13.5	13.1	1.0
9	Sept. 14	29:47	14,423	(Sept. 13)	52	9.0	3	6.4	40	2	.....	.....	16.0	0.420	1,062	2.4	13.9	1.0
10	Sept. 30	13:26	14,700	(Sept. 25)	50	8.6	2	6.5	40	1	.....	.....	17.6	0.424	1,072	5.2	14.1	1.0
11	Oct. 12	24:37	25,065	(Oct. 9)	44	9.8	3	6.3	40	8	12.2	5.0	27.2	0.457	1,155	10.2	15.2	1.1

* Sampled below junction of Michel River

† Discharge records at 52°12' N – 76°00' W on dates shown in brackets

STATION NO. 14 – EASTMAIN RIVER*

12	June [illegible]	18:45	31,800†	[illegible]	[illegible]	8.1	2	6.3	50	5	11.9	7.1	28.2	0.582	1,472	24.0	12.8	1.0
13	Aug. 8	1:25	61,200†	[illegible]	68	9.8	3	6.1	50	3	.....	.....	28.0	0.588	1,487	22.0	13.5	1.1
14	Sept. 14	20:47	34,400	25,400†	58	8.5	2	6.5	40	3	2.2	1.0	25.6	0.545	1,385	9.0	13.1	1.0
15	Oct. 10	38:44	47,400	35,700†	44	11.0	2	6.3	45	7	14.7	2.3	44.0	0.960	4,135	25.2	15.6	1.4
16	Dec. 1	51:34	8,850	7,060	32	.....	4	6.4	35	2	.....	.....	.....	.....	.....	.....	13.7	1.4

* Discharge records at 52°34' 20" N – 78°05' W

STATION NO. 15 – EASTMAIN RIVER

17	Mar.	No sample taken																
18	Apr. 17	12:37	6,800†	.....	32	.....	5	6.1	40	40	.....	.....	.....	.....	.....	.....	26.0	1.5

† Discharge records at 52°34' 20" N – 78°05' W

STATION NO. 16 – CLEARWATER RIVER

19	June [illegible]	13:22	2,300†	.....	62	7.3	2	6.3	35	0.8	.....	.....	.....	.....	.....	.....	13.7	.....
20	Aug. [illegible]	14:30	2,080	.....	68	.....	3	6.3	45	0.9	.....	.....	.....	.....	.....	.....	18.5	.....
21	Sept. 1	17:30	1,900	.....	60	8.1	2	6.5	25	0	.....	.....	.....	.....	.....	.....	14.4	1.1
22	Feb. 18, 60	49:102	486	.....	32	.....	5	6.1	40	0.4	.....	.....	.....	.....	.....	.....	23.8	1.8
23	Apr. 18	10:41	342	.....	32	.....	5	6.2	30	2	.....	.....	.....	.....	.....	.....	23.7	1.8

† Discharge records 1 mile downstream from sampling point

STATION NO. 17 – MICHEL RIVER

24	June 30/59	15:27	146	.....	50	18.7	4	6.5	100	.....	.....	.....	.....	.....	.....	.....	28.0	.....
25	Aug. 8	20:25	68.3	(Aug. 10)	56	26.2	5	5.8	200	50	.....	.....	.....	.....	.....	.....	15.2	.....
26	Aug. 31	18:31	23.2	.....	57	18.8	4	6.6	120	9	.....	.....	.....	.....	.....	.....	27.7	1.5
27	Feb. 19/60	48:101	5-10	.....	32	.....	9	6.4	55	3	.....	.....	.....	.....	.....	.....	08.1	2.4
28	Mar.	No sample taken																
29	Apr. 16	13:48	5-10	.....	32	.....	5	6.6	45	4	.....	.....	.....	.....	.....	.....	43.4	2.8

STATION NO. 18 – OPINACA RIVER

30	July 2/59	18:25	18,074†	(June 24)	62	9.0	3	6.1	50	4	3.4	1.7	31.8	0.286	566	8.0	14.5	.....
31	July 28	28:44	10,555	(July 24)	65	10.3	5	6.0	50	5	4.7	1.6	30.4	0.050	1,046	24.0	15.4	1.2
32	Aug. 13	17:22	2,4[illegible]	Normal	.....	9.2	4	6.1	55	2	.....	.....	28.4	0.049	.....	15.0	15.0	1.2
33	Aug. 28	17:46	[illegible]	Normal	.....	9.5	2	6.2	50	2	.....	.....	28.0	0.038	.....	7.0	14.2	1.0

† Discharge records at 52°34' 15" N – 78°02' W on dates shown on brackets

TABLE II – (Continued)

Chemical Analyses of Surface Waters in the Hudson Bay Drainage Basin

(In parts per million)

Magnesium (Mg)	Iron (Fe) Total	Iron (Fe) Dissolved	Manganese (Mn)	Aluminum (Al)	Copper (Cu)	Zinc (Zn)	Alkalis Sodium (Na)	Alkalis Potassium (K)	Ammonia (NH_3)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulphate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Silica (colorimetric) (SiO_2)	Phosphate (PO_4)	Boron (B)	Hardness as $CaCO_3$ Non-carbonate	Hardness as $CaCO_3$ Total	Sum of constituents	Per cent sodium	Saturation index	Stability index	No.
at 52° 19' 24" N – 77° 06' 42" W – QUEBEC																									
0.3	0.13	0.05	<0.0	0.01	Trace	0.0	0.7	0.5	0.5	0.0	4.5	3.5	0.6	0.0	0.4	4.4	.....	.....	1.0	4.7	14.1	22	−4.0	15	1
0.3	0.21	0.07	<0.0	0.0	Trace	0.0	1.1	1.0	0.4	0.0	5.7	2.3	1.2	0.0	0.4	5.4	.....	.....	1.2	5.9	16.4	25	−4.1	14	2 3
at 52° 18' N – 77° 13' W – QUEBEC																									
0.2	0.67	0.09	0.0	0.11	0.0	0.0	0.7	0.5	0.2	0.0	2.6	2.8	0.6	0.0	0.4	2.1	.....	.....	1.7	3.8	11.1	23	−4.8	16	4
0.2	0.14	0.08	0.0	0.07	Trace	0.0	0.6	0.3	0.1	0.0	2.9	1.1	1.5	0.0	0.0	1.8	.....	.....	1.4	3.8	8.3	22	−4.5	15	5
.....	0.14	0.00	0.0	0.0	0.0	0.0	0.6	0.2	0.3	0.0	3.8	1.9	0.4	0.0	0.1	2.1	0.02	....	1.4	4.5	.....	22	−4.2	15	6
0.3	0.29	0.04	0.0	0.0	Trace	0.0	0.6	0.3	0.2	0.0	2.7	2.9	0.5	0.0	0.1	2.2	.....	.....	2.0	4.2	9.5	22	−4.5	15	7
0.3	0.22	0.03	0.0	0.0	0.0	0.0	0.6	0.3	0.1	0.0	3.2	1.8	0.6	0.0	0.0	2.6	.....	.....	1.4	4.0	8.9	23	−4.4	15	8
0.3	0.23	0.05	0.0	Trace	0.0	0.0	0.6	0.3	.....	0.0	3.7	2.7	0.5	0.0	0.1	2.8	.....	.....	1.7	4.7	10.6	20	−4.3	15	9
0.1	0.27	0.05	0.0	0.01	0.0	0.0	0.7	0.3	.....	0.0	4.0	2.7	0.5	0.0	0.1	3.0	.....	.....	1.1	4.4	11.0	24	−4.1	15	10
0.3	0.55	0.16	0.0	0.0	0.0	0.0	0.7	0.2	0.1	0.0	3.8	3.1	0.5	0.0	0.4	3.2	0.03	....	1.6	4.7	11.8	22	−4.3	15	11
below BASIL GORGE at 52° 14' N – 78° 09' W – QUEBEC																									
.....	0.43	0.08	0.0	0.05	0.0	0.0	0.7	0.3	0.1	0.0	2.7	2.2	0.7	0.0	0.3	2.1	.....	.....	1.9	4.1	.....	24	−4.5	15	12
0.3	0.21	0.05	0.0	0.0	Trace	0.0	0.7	0.4	0.3	0.0	2.6	2.2	0.9	0.0	0.6	2.1	.....	.....	2.4	4.5	9.8	23	−4.7	16	13
0.4	0.27	0.05	0.0	0.0	0.0	0.0	0.7	0.3	.....	0.0	4.1	3.4	0.6	0.0	0.1	2.6	.....	.....	1.5	4.9	11.5	22	−4.2	15	14
0.3	0.44	0.08	0.0	0.0	0.0	0.0	0.7	0.2	0.1	0.0	2.9	3.1	0.9	0.0	0.1	3.1	0.06	....	2.3	4.7	11.3	23	−4.5	15	15
0.5	0.22	0.05	Trace	0.0	Trace	0.05	0.9	0.3	0.2	0.0	5.2	2.7	0.6	0.0	0.0	4.3	.....	.....	1.2	5.5	13.4	25	−4.1	15	16
below BASIL GORGE 52° 14' N – 78° 13' to 78° 14' W – QUEBEC																									17
0.4	2.6	0.15	0.00	0.0	Trace	0.0	1.0	0.5	0.1	0.0	3.8	2.9	1.0	0.0	0.4	4.1	.....	.....	2.2	5.3	13.8	26	−4.5	15	18
near mouth at 52° 12' 48" N – 75° 53' W – QUEBEC																									
.....	0.14	0.04	0.00	0.04	.....	0.0	0.7	0.3	0.0	0.0	2.9	3.0	0.3	0.0	0.0	1.8	.....	.....	2.4	4.8	.....	22	−4.4	15	19
.....	0.16	0.01	0.01	0.0	Trace	0.0	0.6	0.4	0.1	0.0	3.5	3.0	0.7	0.0	0.8	1.9	.....	.....	2.2	5.1	.....	19	−4.3	15	20
0.3	0.13	Trace	Trace	0.0	Trace	0.0	0.5	0.3	0.1	0.0	4.1	2.8	0.5	0.0	0.0	2.1	.....	.....	1.1	4.5	9.8	18	−4.1	15	21
0.4	0.15	0.01	0.0	0.0	Trace	0.1	1.0	0.6	.....	0.0	4.0	5.1	0.6	0.0	0.0	3.7	.....	.....	2.9	6.2	15.3	24	−4.4	15	22
0.4	0.14	0.02	0.0	0.0	Trace	0.0	0.7	0.5	.....	0.0	3.7	4.6	0.4	.....	0.4	3.1	.....	.....	2.7	5.7	13.5	19	−4.5	15	23
near mouth at 52° 20' to 52° 21' N – 77° 05' to 77° 06' W – QUEBEC																									
.....	.....	0.76	0.0	0.0	.....	0.0	2.3	1.4	.....	0.0	5.1	2.2	1.5	0.0	0.2	6.8	.....	.....	3.2	7.4	.....	32	−4.0	14	24
.....	2.2	0.63	0.0	0.0	0.0	0.0	1.1	0.6	0.1	0.0	2.1	1.0	1.2	0.0	1.2	3.9	.....	.....	5.2	6.9	.....	21	−5.2	16	25
1.0	0.45	0.41	0.0	0.0	Trace	0.0	2.4	0.5	0.2	0.0	9.1	2.3	2.2	0.0	0.2	9.0	.....	.....	0.4	7.9	24.0	36	−3.6	14	26
0.9	0.51	0.13	0.0	0.0	Trace	0.01	3.2	0.6	0.3	0.0	13.9	2.6	1.6	0.0	0.0	12	.....	.....	0.0	9.6	29.9	40	−3.5	13	27 28
0.9	0.53	0.22	0.01	0.0	Trace	0.0	3.7	1.0	.....	0.0	14.9	2.9	2.7	0.0	0.4	12	.....	.....	0.0	10.7	33.8	39	−3.8	14	29
at 52° 24" N – 77° 14' W – QUEBEC																									
.....	0.33	0.06	0.0	0.05	0.0	0.0	0.7	0.3	0.1	0.0	2.1	2.8	0.6	0.0	0.2	2.2	.....	.....	2.1	3.8	.....	25	−4.8	16	30
0.4	0.23	0.04	0.0	0.05	0.0	0.0	1.0	0.4	0.3	0.0	3.4	2.5	1.0	0.0	0.4	1.9	.....	.....	1.8	4.6	10.5	28	−4.7	15	31
0.3	0.20	0.04	0.0	0.03	Trace	0.0	0.6	0.3	0.2	0.0	2.7	2.0	0.9	0.0	0.0	1.7	.....	.....	2.2	4.2	8.4	21	−4.8	16	32
0.4	0.25	0.03	0.0	0.0	0.0	0.0	0.7	0.2	0.2	0.0	2.1	3.1	0.8	0.0	0.1	2.2	.....	.....	2.4	4.1	9.6	26	−4.9	16	33

TABLE II – (Continued)

Chemical Analyses of Surface Waters in the Hudson Bay Drainage Basin

(In parts per million)

No.	Date of collection	Time	Discharge (Second-feet) at sampling point	Discharge (Second-feet) Monthly mean	Water temperature (°C.)	Oxygen consumed by $KMnO_4$	Carbon dioxide (calculated)	pH	Colour (Platinum cobalt scale)	Turbidity (Silica scale)	Suspended matter: Dried at 105°C.	Suspended matter: Ignited at 550°C.	Residue on evaporation dried at 105°C. (Dissolved solids): [illegible]	Residue on evaporation dried at 105°C. (Dissolved solids): [illegible]	Residue on evaporation dried at 105°C. (Dissolved solids): [illegible]	[illegible]	[illegible]	[illegible]
STATION NO. 19 – [illegible] RIVER																		
1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.0	[illegible]	[illegible]	50	4	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
3	Dec. 12	14:11	[illegible]	[illegible]	42	[illegible]	[illegible]	[illegible]	45	4	4.7	4.7	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

† Discharge records at 52°14' 15" N – 78°02' W on date shown in brackets

STATION NO. 19 – [illegible] RIVER

4	Feb. 20/60	47:100	2,200	[illegible]	32	[illegible]	3	6.3	40	0.8	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
5	Mar.	No sample taken																
6	Apr. 16	13:38	2,[illegible]	[illegible]	32	[illegible]	3	6.3	45	10	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

e estimate

STATION NO. 26 – [illegible] RIVER*

7	July 1/59	14:26	1,545	[illegible]	57	9.2	[illegible]	6.1	45	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
8	July 28	21:29	1,665	[illegible]	66	[illegible]	[illegible]	6.1	50	2	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
9	Sept. 2	7:28	968	[illegible]	50	10.7	3	6.2	40	0.8	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
10	Feb. 20/60	47:100	251	[illegible]	32	[illegible]	4	6.9	50	0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
11	Mar.	No sample taken																
12	Apr. 20	9:34	240	[illegible]	32	[illegible]	4	6.2	45	2	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

* At outlet of Menawey Lake

STATION NO. 21 – ELL RIVER*

13	July 2/59	14:26	3,931†	[illegible]	59	6.8	2	6.1	45	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
14	July 28	21:29	3,240	[illegible]	68	6.5	2	6.4	30	0.8	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
15	Aug.	No sample taken																
16	Sept. 2	16:29	2,946	[illegible]	61	8.5	4	6.3	25	0.8	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

* Sampled at outlet of Ell Lake
† Discharge at point, 1 mile downstream from sampling point

STATION NO. 22 – ELL RIVER

17	Feb. 24/60	46:99	719	[illegible]	32	[illegible]	3	6.1	30	0.4	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

† Discharge at point, 1 mile downstream from sampling point, Station No. 21

STATION NO. 23 – [illegible] RIVER, NEMISCAU LAKE

18	Aug. 21/59	80:102	41,000†	40,700†	61	6.4	3	6.8	20	0	[illegible]	[illegible]	27.2	0.047	3,007	16.4	26.1	2.7
19	Sept. 4	66:76	35,400	33,100	61	6.2	2	6.9	20	0	[illegible]	[illegible]	30.4	0.043	2,902	20.0	26.8	2.6
20	Sept. 17	53:68	31,600	33,100	48	6.0	1	7.1	20	0	[illegible]	[illegible]	27.6	0.048	2,352	11.2	26.2	2.7

† Discharge records at 51° 19' 35" N – 76° 54' 30" W, drainage area 15,900 sq. miles

STATION NO. 24 – BROADBACK RIVER (LAKE EVANS)

21	July 3/59	56:60	22,900†	(June 22)	67	9.1	3	6.4	40	3	[illegible]	[illegible]	34.8	0.047	2,149	13.4	25.2	2.0
22	July 30	29:33	13,092	(July 25)	69	8.7	2	6.7	45	1	[illegible]	[illegible]	35.2	0.048	1,243	19.6	19.[illegible]	1.9

† Discharge records at 51° 11' N – 77° 26' W on dates shown in brackets

STATION NO. 25 – BROADBACK RIVER

23	July 29/59	33:43	13,092†	(July 25)	70	9.7	2	6.7	45	5	8.5	4.4	43.6	0.059	1,539	20.4	25.7	2.4
24	Aug. 17	28:67	7,413	(Sept. 20)	43	8.4	5	6.5	40	3	[illegible]	[illegible]	36.0	0.049	[illegible]	9.[illegible]	26.[illegible]	2.3

† Discharge records at 51° 11' N – 77° 26' W on dates shown in brackets

STATION NO. 26 – LOUVICOURT RIVER (SLEEPY LAKE)*

25	June 11/59	21:32	[illegible]	[illegible]	68	18	5	6.2 (6.3)	125 (200)	2	6.6	3.6	58	0.079	[illegible]	30.8	27.4	2.4

* Sampled from highway No. 58 bridge

TABLE II – (Continued)

Chemical Analyses of Surface Waters in the Hudson Bay Drainage Basin

(In parts per million)

Magnesium (Mg)	Iron (Fe) Total	Iron (Fe) Dissolved	Manganese (Mn)	Aluminum (Al)	Copper (Cu)	Zinc (Zn)	Alkalis Sodium (Na)	Alkalis Potassium (K)	Ammonia (NH_3)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulphate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Silica (colorimetric) (SiO_2)	Phosphate (PO_4)	Boron (B)	Hardness as $CaCO_3$ Non-carbonate	Hardness as $CaCO_3$ Total	Sum of constituents	Per cent sodium	Saturation index	Stability index	No.
at 52°24' N – 77°14' W – QUEBEC (concluded)																									
0.4	0.27	0.05	0.0	0.02	0.0	0.0	0.8	0.3	0.3	0.0	2.9	2.8	0.7	0.0	0.1	2.3	.....	.....	2.0	4.4	10.0	26	−4.9	16	1
0.4	0.51	0.06	0.02	0.06	0.0	0.0	0.7	0.2	0.4	0.0	2.6	3.9	0.9	0.0	0.2	2.4	0.06	.....	2.0	4.1	11.1	24	−4.8	16	2
0.3	0.40	0.11	0.0	0.02	0.0	0.0	0.7	0.2	0.2	0.0	2.9	3.1	1.1	0.0	0.0	2.4	0.00	.....	2.3	4.7	10.8	22	−4.6	15	3
at 52°23' N – 77°18' W – QUEBEC																									
0.5	0.13	0.03	0.0	0.0	0.0	0.0	1.1	0.3	.....	0.0	4.6	4.0	0.6	0.0	0.0	3.6	.....	.....	1.2	5.0	13.6	30	−4.4	15	4
																									5
0.8	1.1	0.06	<0.0	0.0	Trace	0.0	3.6	0.9	.....	0.0	6.6	3.6	3.8	0.0	0.4	3.3	.....	.....	1.6	7.0	21.2	49	−4.0	14	6
at 52°46' 30" N – 76°10' W – QUEBEC																									
.....	0.08	0.07	0.0	0.07	.....	0.0	0.6	0.4	0.3	0.0	0.0	1.8	2.4	0.0	0.2	1.8	.....	.....	3.1	3.1	.....	24	−6.6	18	7
.....	0.11	0.02	0.0	0.0	0.0	0.0	0.7	0.3	0.3	0.0	1.5	3.0	0.8	0.0	0.0	1.7	.....	.....	2.3	3.5	.....	28	−4.8	16	8
0.3	0.32	0.00	0.0	0.0	Trace	0.0	0.5	0.3	0.1	0.0	2.6	2.4	0.9	0.0	0.0	1.9	.....	.....	1.1	3.2	8.4	23	−4.7	16	9
0.4	0.15	0.02	0.0	0.0	Trace	0.0	1.1	0.5	0.2	0.0	2.2	4.6	1.0	0.0	0.0	4.1	.....	.....	2.8	4.6	13.9	32	−5.0	16	10
																									11
0.5	0.19	0.07	Trace	0.0	Trace	0.0	1.3	0.6	.....	0.0	3.7	2.3	1.4	0.0	0.4	3.6	.....	.....	1.8	4.8	13.1	33	−4.5	15	12
at 52°39' 30" N – 76°09" W – QUEBEC																									
.....	0.11	0.04	0.0	0.05	.....	.....	0.5	0.3	.....	0.0	1.8	2.8	0.4	0.0	0.0	1.7	.....	.....	2.4	3.9	.....	19	−4.8	16	13
.....	0.03	0.00	0.0	0.03	0.0	0.0	0.6	0.4	0.1	0.0	2.9	2.8	0.5	0.0	0.6	1.5	.....	.....	1.9	4.3	.....	21	−4.3	17	14
																									15
0.3	0.11	0.03	0.0	0.0	0.0	0.0	0.5	0.3	0.1	0.0	3.0	2.3	0.7	0.0	0.0	2.1	.....	.....	1.0	3.5	8.6	22	−4.5	15	16
at 52°40' N – 76°14' W – QUEBEC																									
0.3	0.10	0.03	0.0	0.0	Trace	0.0	0.6	0.3	.....	0.0	2.2	3.4	0.2	0.0	0.0	3.3	.....	.....	2.0	3.8	10.2	24	−5.0	16	17
at 54°24' 43" N – 76°44' 10" W – QUEBEC																									
0.9	0.15	0.05	0.01	0.0	0.0	0.0	0.6	0.2	0.0	0.0	9.9	4.0	0.5	0.0	0.2	2.2	0.01	.....	2.3	10.4	16.2	11	−3.2	13	18
1.1	0.13	0.07	Trace	0.0	0.0	0.0	0.8	0.3	0.0	0.0	10.8	3.7	0.8	0.0	0.2	2.2	0.01	.....	2.1	11.0	17.1	13	−3.0	13	19
1.1	0.14	0.03	0.01	0.0	0.0	0.0	0.7	0.3	0.0	0.0	10.6	4.1	0.6	0.0	0.2	2.6	0.04	.....	2.6	11.3	17.6	11.5	−2.8	13	20
at 50°49' N – 77°01' W – QUEBEC																									
0.6	0.16	0.03	0.0	0.01	Trace	0.0	0.8	0.4	0.1	0.0	4.8	4.9	0.7	0.0	0.2	3.0	.....	.....	3.6	7.5	15.0	18	−3.9	14	21
0.7	0.17	0.01	0.0	0.0	Trace	0.0	0.7	0.4	0.1	0.0	5.1	3.9	0.4	0.0	0.3	2.7	.....	.....	3.4	7.6	13.5	16	−3.6	14	22
below LAKE EVANS 51°05' 42" N – 76°47' 22" W – QUEBEC																									
0.6	0.40	0.04	0.0	0.0	Trace	0.0	1.1	0.4	0.2	0.0	7.1	3.7	0.7	0.0	0.2	3.4	.....	.....	5.8	8.5	16.0	21	−3.4	14	23
0.6	0.29	0.04	0.0	0.0	0.0	0.0	1.4	0.5	.....	0.0	9.0	3.9	1.1	0.0	0.2	3.8	.....	.....	0.8	8.2	18.3	25	−3.6	14	24
near LOUVICOURT, QUEBEC																									
1.2	0.79	0.20	0.0	0.0	0.0	0.1	1.0	0.5	0.2	0.0	5.6	6.0	1.2	0.0	0.0	4.3	.....	.....	6.3	10.9	19.7	15	−4.0	14	25

TABLE II – (Continued)

Chemical Analyses of Surface Waters in the Hudson Bay Drainage Basin

(In parts per million)

No.	Date of collection	Storage period	Stream discharge (Second-feet) On sampling date	Stream discharge (Second-feet) Monthly mean	Water temperature (°C.)	Oxygen consumed by $KMnO_4$	Carbon dioxide (calculated) (CO_2)	pH	Alkalinity	Hardness	Suspended matter		Residue on evaporation dried at 105°C. (Dissolved solids)					
STATION NO. 27 – LAKE BELLEMONT*																		
1	June 11/59	21:32	.....	.....	72	12.3	0.9	7.1 (6.6)	80 (130)	0	23.3	9.3	45.4	0.057	.....	30.4	33.8	3.1
STATION NO. 28 – BELL RIVER*																		
2	Aug. 21/47	:289	.....	.....	75	.....	2 (3)	7.1 (7.1)	55 (95)	.....	.....	.....	41.0	0.042	.....	14.8	28.5	4.6
STATION NO. 29 – BELL RIVER†																		
3	Jan. 6	18:43	1,900e	2,000e	32	16.5	2	6.3	100	2	.....	.....	48.8	0.066	96.9	30.4	32.0	3.3
4	Feb. 5	24:31	1,900e	1,900e	32	.....	2	6.7	90	0.9	.....	.....	.....	.....	.....	.....	32.6	3.2
5	Mar. 6	24:31	1,900e	1,900e	32	.....	2	6.8	80	3	.....	.....	.....	.....	.....	.....	33.9	3.6
6	Apr. 6	24:31	1,900e	1,900e	32	13.8	0	7.5	70	1	.....	.....	40.8	0.055	44.2	24.0	34.2	3.4
7	May 6	24:31	2,310e	2,100e	42	.....	2	6.6	65	2	.....	.....	.....	.....	.....	.....	31.8	3.4
8	June 6	24:31	1,800e	1,800e	52	.....	4	6.3	60	5	.....	.....	.....	.....	.....	.....	30.8	2.5
9	July 6	24:31	1,250	1,820	.....	11.6	2	6.7	70	5	7.4	2.1	41.6	0.057	136	31.6	28.5	3.1
10	Aug. 5	24:31	700	570	.....	.....	3	6.6	55	3	.....	.....	.....	.....	.....	.....	30.3	3.1
11	Sept. 5	24:31	1,400	1,440	.....	.....	3	6.7	70	2	.....	.....	.....	.....	.....	.....	30.0	3.1
12	Oct. 5	24:31	1,110	1,210	.....	14.8	3	6.5	70	5	3.7	2.7	51.6	0.070	77.2	28.4	30.8	3.5
13	Nov. 5	24:31	1,500	1,550	40	.....	3	6.6	60	4	.....	.....	.....	.....	.....	.....	31.8	3.5
14	Dec. 5	24:31	1,430	1,520	.....	.....	3	6.5	80	2	.....	.....	.....	.....	.....	.....	31.5	3.9
STATION NO. 30 – BELL RIVER*																		
15	June 12/59	24:31	.....	.....	78	11.0	3	6.5 (6.8)	80	5	9.7	6.8	48.8	0.066	.....	26.0	28.1	3.1
STATION NO. 31 – MEGISCANE RIVER*																		
16	Dec. 1–5	23:130	2,930e†	3,500e†	39	12.1	3	6.4	80	0	.....	.....	35.2	0.048	278	22.4	29.6	2.9
17	Jan. 31–Feb. 5	18:40	1,890e	2,060e	35	.....	4	6.2	85	2	.....	.....	.....	.....	.....	.....	25.2	2.8
18	Apr. 13	24:69	3,160e	3,860e	34	.....	10	6.2	10	0.7	.....	.....	47.2	0.064	402	12.8	38.5	3.4
19	May 4	42:51	10,300	12,200	40	.....	6	6.1	60	3	.....	.....	.....	.....	.....	.....	23.4	2.3
20	June 15	15:32	10,400	9,160	58	.....	3	6.5	70	2	.....	.....	.....	.....	.....	.....	23.2	2.0
21	July 13	7:24	4,170	4,190	68	10.5	2	6.4	60	1	.....	.....	37.2	0.051	418	26.0	19.7	1.9
22	Oct. 26	20:168	6,670	7,400	45	15.2	2	6.3	70	0	.....	.....	.....	.....	.....	.....	20.4	2.1
23	Nov. 25	10:53	8,180*	8,740*	39	.....	4	6.2	80	0.8	.....	.....	.....	.....	.....	.....	21.8	2.0
STATION NO. 32 – PEPLUPIERS RIVER*																		
24	June 12/59	24:31	.....	.....	64	26.5	8	6.3 (6.1)	200	5	14.2	9.9	72.0	0.098	.....	44.4	35.6	3.9
STATION NO. 33 – TASCHEREAU RIVER*																		
25	June 12/59	24:31	.....	.....	72	18.4	6	6.3 (6.8)	160	30	28	24	54.4	0.074	.....	24.8	31.2	6.5

*Sampled from wharf

*Sampled from highway

*Sampled from Highway No. 45 bridge

*Sampled from Highway No. 45 bridge.

*About 5 miles above Senneterre
†At gauge at Lat. 48°21', Long. 77°16' 25" about 3½ miles above Senneterre, drainage area 751 sq. miles.

†Drainage station 3½ miles upstream from Senneterre, drainage basin 751 square miles.

*Sampled 1¼ miles below western crossing of railway bridge
†At gauge at Lat. 48°20' 14", Long. 77°05' 26"

TABLE II – (Continued)

Chemical Analyses of Surface Waters in the Hudson Bay Drainage Basin

(In parts per million)

Magnesium (Mg)	Iron (Fe) Total	Iron (Fe) Dissolved	Manganese (Mn)	Aluminum (Al)	Copper (Cu)	Zinc (Zn)	Alkalis Sodium (Na)	Alkalis Potassium (K)	Ammonia (NH_3)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulphate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Silica (colorimetric) (SiO_2)	Phosphate (PO_4)	Boron (B)	Hardness as $CaCO_3$ Non-carbonate	Hardness as $CaCO_3$ Total	Sum of constituents	Per cent sodium	Saturation index	Stability index	No.
at OBASKA, QUEBEC																									
0.6	0.72	0.08	0.0	0.0	0.0	0.0	1.8	1.1	0.2	0.0	7.3	5.4	1.7	0.0	1.5	3.3	.....	.....	4.2	10.2	24.5	21	−2.9	13	1
near TIBLEMONT, QUEBEC																									
1.0	.....	0.03	.....	.....	.....	.....	.....	.....	.....	0.0	14.6	4.6	0.0	.....	0.8	4.4	.....	.....	1.1	13.1	21.6	.....	−2.6	12	2
			Dissolved oxygen - 7.3 ppm																						
below SENNETERRE, QUEBEC – Drainage area - 770 square miles																									
1.1	.....	0.06	0.0	0.0	0.0	0.0	0.9	0.5	0.1	0.0	5.0	6.3	0.5	0.0	0.3	4.4	0.0	.....	8.7	12.8	19.8	13	−3.5	14	3
1.2	.....	.....	.....	.....	.....	.....	1.0	0.5	0.3	0.0	5.7	5.7	0.8	.....	0.2	4.7	.....	.....	8.2	12.9	20.1	14	−3.5	14	4
1.3	.....	.....	.....	.....	.....	.....	0.9	0.4	0.3	0.0	6.2	8.3	0.9	.....	0.3	5.0	0.1	.....	9.2	14.3	23.8	12	−3.2	13	5
1.0	0.09	0.07	0.0	0.0	Trace	0.0	0.9	0.6	0.0	0.0	7.2	6.9	0.4	0.0	0.4	5.0	0.0	.....	9.7	15.6	22.2	13	−2.5	13	6
0.6	.....	.....	.....	.....	.....	.....	1.6	0.6	0.2	0.0	6.0	5.1	1.8	.....	0.8	4.7	.....	0.00	6.1	11.0	21.5	23	−3.4	13	7
1.1	.....	.....	.....	.....	.....	.....	1.0	0.6	0.3	0.0	5.6	5.8	0.9	.....	0.4	3.4	0.1	.....	6.2	10.8	18.5	16	−3.9	14	8
0.7	0.41	0.09	0.0	0.01	0.0	0.0	1.0	0.5	.....	0.0	6.3	6.0	1.0	0.0	0.4	2.4	0.1	.....	5.4	10.6	18.3	16	−3.4	14	9
0.7	0.19	0.04	0.0	0.0	0.0	0.0	1.0	0.6	0.1	0.0	6.8	7.0	1.3	.....	0.2	1.8	0.0	.....	5.0	10.6	19.1	16	−3.4	13	10
0.9	0.41	0.07	.....	.....	.....	.....	1.2	0.8	0.5	0.0	7.3	6.3	0.8	.....	0.8	2.7	.....	.....	5.4	11.4	20.3	17	−3.4	14	11
0.8	0.46	0.11	0.0	0.0	0.0	0.0	1.2	0.6	0.2	0.0	6.3	6.9	0.7	0.0	0.2	3.1	.....	.....	6.8	12.0	20.2	17	−3.6	14	12
0.8	0.46	.....	.....	.....	.....	.....	1.0	0.5	0.5	0.0	6.2	8.3	1.2	.....	0.1	3.0	.....	.....	6.9	12.0	21.5	15	−3.4	13	13
0.8	.....	.....	.....	.....	.....	.....	1.0	0.6	0.3	0.0	6.1	5.6	0.7	.....	0.1	4.0	.....	.....	8.0	13.0	19.7	14	−4.6	14	14
at SENNETERRE, QUEBEC																									
0.8	0.68	0.11	0.0	0.0	Trace	0.02	1.0	0.5	.....	0.0 (0)	6.6 (7.3)	6.2	1.2	0.0	0.4	3.5	.....	.....	5.6	11.0	20.1	16	−3.6	14	15
near MÉGISCANE, QUEBEC – Drainage area less Mégiscane-Susie diversion – 3,157 square miles																									
0.8	0.34	0.02	0.0	0.07	0.0	0.0	1.4	0.5	0.1	0.0	5.1	5.0	1.1	0.0	0.8	5.8	0.1	.....	4.1	8.3	20.1	25	−4.1	15	16
0.8	.....	.....	.....	.....	.....	.....	1.0	0.3	0.2	0.0	4.5	4.4	1.3	.....	0.3	5.6	.....	0.00	5.3	9.0	18.2	19	−4.3	15	17
0.7	.....	0.03	0.01	0.0	Trace	0.0	2.0	0.6	0.0	0.0	9.9	5.7	0.6	0.0	0.6	13	0.0	0.00	3.3	11.4	31.9	26	−3.7	14	18
0.5	.....	.....	.....	.....	.....	.....	0.8	0.3	0.2	0.0	4.5	4.5	0.5	.....	0.2	4.7	.....	.....	4.1	7.8	16.0	18	−4.4	15	19
0.8	.....	.....	.....	.....	.....	.....	0.7	0.4	0.3	0.0	5.6	3.7	1.0	.....	0.2	3.7	.....	.....	3.7	8.3	15.4	15	−3.8	14	20
0.6	0.20	0.10	0.0	0.03	Trace	0.0	0.7	0.3	0.3	0.0	3.7	4.2	0.9	0.0	0.2	3.0	0.1	.....	4.2	7.2	13.7	16	−4.1	15	21
0.5	0.37	0.06	0.0	0.0	0.0	0.0	0.7	0.3	0.4	0.0	2.7	5.0	0.8	0.0	Trace	4.4	0.0	.....	5.1	7.3	15.2	16	−4.3	15	22
0.6	.....	.....	.....	.....	.....	.....	0.7	0.3	0.1	0.0	3.7	5.6	0.6	.....	0.2	4.8	0.0	.....	4.5	7.5	16.6	16	−4.3	15	23
near SENNETERRE, QUEBEC																									
1.8	1.2	0.39	0.0	0.0	0.0	0.05	1.0	0.4	0.2	0.0 (0)	10.8 (18.3)	5.3	1.6	0.0	0.4	3.0	.....	.....	7.5	16.4	22.9	11	−3.5	13	24
near BELCOURT, QUEBEC																									
1.3	1.9	0.34	0.0	0.0	Trace	0.03	0.9	0.5	0.3	0.0 (0)	8.3 (9.7)	5.3	1.3	0.0	0.3	2.8	.....	.....	7.3	14.1	20.4	11	−3.6	14	25

TABLE II – (Continued)

Chemical Analyses of Surface Waters in the Hudson Bay Drainage Basin

(In parts per million)

No.	Date of collection	Storage period (Days)	Stream discharge (Second-feet): On sampling date	Stream discharge (Second-feet): Monthly mean	Water temperature (°F)	Oxygen consumed by $KMnO_4$	Carbon dioxide (calculated) (CO_2)	pH	Colour (Hazen units)	Turbidity (Units)	Suspended matter: Dried at 105°C	Suspended matter: Ignited at 550°C	Residue on evaporation dried at 105°C (Dissolved solids): P.P.M.	Tons per acre foot	Tons per day	Loss on ignition at 550°C	Specific conductance K × 10⁶ at 25°C	Calcium (Ca)
	STATION NO. 34 – [illegible] LAKE																	
1	[illegible]	[illegible]			41	[illegible]	4	[illegible]	25	[illegible]			64.8	[illegible]		[illegible]	[illegible]	14.8
	STATION NO. 35 – [illegible] LAKE																	
2	June [illegible]	[illegible]				1.2	5	[illegible]	60	1			34.8	[illegible]		28.8	20.3	2.5
3	Sept. [illegible]	[illegible]			[illegible]	12.5	6	6.2	50	[illegible]			42.4	[illegible]		14.4	[illegible]	[illegible]
	* West of [illegible], Que.																	
	STATION NO. 36 – LORTIE LAKE*																	
4	June 12/59	[illegible]		...	–	9.4	8	7.1	30	1,200	706	675	Lithium (Li) – 0.1 ppm				260	14.[illegible]
	* Process water for the Mine's mill																	
	STATION NO. 37 – HARRICANAW RIVER																	
5	June 14/59	25:45	....	....	65	16.6	4	6.5 (6.5)	110	15	16	13	70.8	......		28.5	59.7	6.3
	STATION NO. 38 – LAKE LEMOINE*																	
6	Aug. 19/47	:307	....	....	74	......	2 (2)	7.4 (7.4)	55 (120)	...... (7)	....	....	52.2	0.071		17.0	54.7	9.4
						Dissolved oxygen – 7.1 ppm												
7	June 13/59	25:34	....	....	65	11.5	6	6.6	80	11	21.4	14.5	65.2	0.089		35.2	58.8	7.3
	* Sampled from Highway No. 59 bridge																	
	STATION NO. 39 – LAKE LA MOTTE*																	
8	Aug. 18/47	:292	...	...	76		2 (1.7)	7.4 (7.8)	40 (260)	... (65)	...	...	70.6	0.096	...	23.2	55.2	7.0
	* Sampled from shore																	
	STATION NO. 40 – HARRICANAW RIVER																	
9	May 21/47	:2	10,200†	7,676†	.....	......	14	6.3	110	2			58.4	0.079	1,606			4.8
10	June 28	:4	6,230	8,494	.....	......	11	6.5	135	13	......	......	83.6	0.114	1,405	27.4		5.8
11	July 22	:28	2,670	3,570	.....	......	24	6.3	120	16	....	....	86.4	0.109	579	31.0		6.0
12	Aug. 22	:293	1,420	1,705	74	......	2 (4)	7.1 (6.9)	70 (260)	...... (25)	....	....	71.8	0.098	275	31.4	55.7	6.3
13	Aug. 23	:16	1,360	1,705	.....	......	14	6.5	110	20	.		82.4	0.112	304	33.2		7.8
14	Sept. 19††	:26	820	1,084	.....	......	1	7.5	220	25	......	......	133	0.181	294	53.6	55.8	7.8
15	Sept. 23	:22	1,400	1,084	.....	......	6	6.8	140	9	...	...	108	0.147	409	51.6	51.2	7.5
16	Oct. 31	:21	960	1,328	.....	......	2	7.3	95	15		...	88.0	0.120	228	26.4	61.5	7.8
17	Nov. 19	:16	750	828	.....	......	4	7.0	100	30	...	...	84.8	0.115	172	24.[illegible]	59.3	7.[illegible]
18	Dec. 17	:42	678	648	.....	......	3	7.5	165	30	...	...	83.0	0.113	152	21.2	85.[illegible]	7.7
19	Jan. 20/48	:22	466	483	.....	......	23	6.7	110	11	.	...	97.2	0.132	122	31.8	99.4	9.5
20	Feb. 18	:9	382	391	.....	......	37	6.6	130	20	...	...	98.2	0.134	101	32.6	99.9	10.4
21	Apr. 18	:23	2,320	2,620	.....	......	9	6.3	110	7		...	69.6	0.095	435	32.2	53.6	5.6
22	June 12/59*	24:31	3,730	3,530	68	11.9	3.5	6.8	80	22	18.4	16.4	73.6	0.100	740	30.4	58.2	6.9
	† Discharge records at Station No. 41 †† Low water sample * Field sample at bridge																	
	STATION NO. 41 – HARRICANAW RIVER*																	
23	[illegible]	11:123	1,000	944	40	6.7	2	8.2	50	2	..		227	0.309	[illegible]	69.2	366	45.7

* 1½ miles below Amos, Que.

TABLE II – (Continued)

Chemical Analyses of Surface Waters in the Hudson Bay Drainage Basin

(In parts per million)

Magnesium (Mg)	Iron (Fe) Total	Iron (Fe) Dissolved	Manganese (Mn)	Aluminum (Al)	Copper (Cu)	Zinc (Zn)	Alkalis Sodium (Na)	Alkalis Potassium (K)	Ammonia (NH_3)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulphate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Silica (colorimetric) (SiO_2)	Phosphate (PO_4)	Boron (B)	Hardness as $CaCO_3$ Non-carbonate	Hardness as $CaCO_3$ Total	Sum of constituents	Per cent sodium	Saturation index	Stability index	No.
at CHIBOUGAMAU, QUEBEC																									
3.0	.....	0.02	0.0	0.0	Trace	0.20	0.6	0.2	0.0	0.0	51.8	5.6	1.5	0.0	0.1	3.8	.....	.....	6.8	49.3	55.3	2.6	−1.3	9.9	1
near QUEBEC LITHIUM (Mine) TOWNSITE*, QUEBEC																									
0.6	0.47	0.16	0.0	0.0	0.0	0.05	1.4	0.6	.....	0.0	4.4	7.0	0.9	0.0	0.4	1.7	.....	.....	5.1	8.7	17.5	24	−4.3	15	2
0.7	0.14	0.04	0.0	0.0	Trace	0.0	2.8	1.3	.....	0.0	5.5	9.6	2.3	0.0	0.7	0.6	.....	.....	4.9	9.4	23.3	35	−4.1	14	3
near QUEBEC LITHIUM (Mine) TOWNSITE, QUEBEC																									
2.1	4.3	2.1	0.08	0.70	0.0	Trace	13.5	6.4	.....	0.0	66.2	13.9	7.1	.....	0.6	13	.....	.....	0.0	44.1	106	34	−1.4	9.9	4
near VARSAN, QUEBEC																									
1.8	1.4	0.46	0.01	0.0	Trace	0.5	1.8	0.8	.....	0.0 (0)	9.0 (11)	15.7	1.7	0.0	0.4	4.6	.....	.....	15.2	22.6	38.3	14	−3.1	13	5
at MINECOLE, QUEBEC																									
1.9	.....	0.18	.....	.....	.....	.....	.....	.....	.....	0.0 (0)	24.4 (22)	6.5	0 (0)	.....	4.4	6.6	.....	.....	11.3	31.3	.....	.....	.....	.....	6
1.4	1.7	0.09	0.0	0.02	0.0	0.0	1.3	1.1	.....	0.0	17.1	10.7	1.0	0.0	0.1	4.6	0.06	.....	10.0	24.0	35.1	10.5	−2.7	12	7
at LA MOTTE, QUEBEC																									
2.0	.....	1.2	.....	.....	.....	.....	.....	.....	.....	0.0 (0)	26.8 (22)	7.4	0 (0.4)	.....	1.7	6.4	.....	.....	3.7	25.7	38.9	.....	−1.7	11	8
at AMOS, QUEBEC – Drainage area, about 1,400 square miles																									
2.0	.....	0.04	.....	.....	.....	.....	as Na 2.9	.....	.....	0.0	16.8	6.1	0.0	.....	5.8	4.7	.....	.....	6.4	20.2	34.6	.....	−3.2	13	9
2.5	.....	1.38	.....	.....	.....	.....	3.4	.....	.....	0.0	21.2	8.1	0.0	.....	3.5	3.6	.....	.....	7.3	24.7	38.7	.....	−2.8	12	10
2.4	.....	0.87	.....	.....	.....	.....	2.6	.....	.....	0.0	29.8	4.6	.....	.....	1.8	1.4	.....	.....	0.8	24.8	33.2	.....	−2.9	12	11
1.8	.....	1.04	.....	.....	.....	.....	.....	.....	.....	0.0 (0)	17.1 (18)	6.7	1.5	.....	4.3	5.6	.....	.....	9.2	23.2	34.6	.....	−2.3	12	12
3.1	1.24		.....	.....	.....	.....	3.6	.....	.....	0.0	26.4	7.4	0.05	.....	3.5	3.6	.....	.....	10.6	32.2	42.0	.....	−2.6	12	13
3.1	2.54		.....	.....	.....	.....	3.5	.....	.....	0.0	24.4	8.4	0.0	.....	1.0	5.7	.....	.....	12.3	32.3	41.6	.....	−1.6	11	14
2.9	1.04		.....	.....	.....	.....	5.1	.....	.....	0.0	23.4	10.5	0.0	.....	0.8	10	.....	.....	11.6	30.8	48.3	.....	−2.4	12	15
3.0	1.5		.....	.....	.....	.....	1.7	.....	.....	0.0	27.1	7.6	0.0	.....	1.4	4.6	.....	.....	9.8	31.8	39.3	.....	−1.8	11	16
2.4	1.5		.....	.....	.....	.....	5.2	.....	.....	0.0	26.4	9.4	0.0	.....	1.3	3.8	.....	.....	6.0	27.6	42.2	.....	−2.1	11	17
4.5	3.2		.....	.....	.....	.....	6.0	.....	.....	0.0	51.2	5.6	0.0	.....	0.4	15	.....	.....	0.0	37.8	64.2	.....	−1.4	10	18
4.5	5.3		.....	.....	.....	.....	7.6	.....	.....	0.0	72.2	5.9	0.0	.....	0.2	15	.....	.....	0.0	42.6	78.4	.....	−2.0	11	19
5.3	5.1		.....	.....	.....	.....	5.0	1.0	.....	0.0	71.0	3.3	0.0	.....	0.4	15	.....	.....	0.0	47.7	75.5	.....	−2.0	10	20
2.5	0.45		.....	.....	.....	.....	2.0	1.5	.....	0.0	11.7	8.4	0.0	.....	4.4	5.0	.....	.....	0.0	53.6	35.2	.....	−3.3	13	21
1.7	1.5	0.22	0.00	0.0	0.0	0.07	1.6	1.0	.....	0.0	13.9	11.5	1.4	0.0	0.8	4.3	.....	.....	7.8	19.2	36.3	11.8	−2.6	12	22
below AMOS, QUEBEC – Drainage area, 1,400 square miles																									
11.9	.....	0.06	0.02	0.0	0.0	1.0	11.5	10.1	0.2	0.0	220	15.6	2.9	0.0	0.8	11	0.0	.....	0.0	163	219	12	+0.7	8.9	23

TABLE II – (Continued)

Chemical Analyses of Surface Waters in the Hudson Bay Drainage Basin

(In parts per million)

No.	Date of collection	Storage period (Days)	Stream discharge (Second-feet): On sampling date	Stream discharge (Second-feet): Monthly mean	Water temperature (°F.)	Oxygen consumed by $KMnO_4$	Carbon dioxide (calculated) (CO_2)	pH	Colour (Hazen) (Units)	Turbidity (Units)	Suspended matter: Dried at 105° C.	Suspended matter: Ignited at 550° C.	Residue on evaporation dried at 105° C. (Dissolved solids): P.P.M.	Residue on evaporation dried at 105° C. (Dissolved solids): Tons per acre-foot	Residue on evaporation dried at 105° C. (Dissolved solids): Tons per day	[illegible]	[illegible]	[illegible]
[illegible]																		
1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2	Feb. 4	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
3	Mar. [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4	Apr. 6	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
5	May 4	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
6	June 4	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
7	July [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
8	Aug. 6	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
9	Sept. 3	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
10	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
11	Nov. 4	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
12	Dec. 20	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

* Tributary below Amos, Quebec.

STATION NO. [illegible] – [illegible] RIVER

13	Aug. 10/59	11:16	.....	.....	70	9.1	3	6.4	35	5	29	26	44.6			28.4	34.1	2.9

STATION NO. [illegible] – [illegible] LAKE

14	Aug. 20/47	315			72.5		(3.0)	7.5 (7.8)	100 (150)	(+7)			57.2	0.078		38.2	58.7	1.8
						Dissolved oxygen – 7.2 ppm												

STATION NO. 44 – MALARTIC RIVER* [illegible] LAKE

15	Aug. 19/47	324			67		0.8 (8)	7.2 (5.9)	75 (125)	(+7)			32.8	0.045		22.0	29.9	2.4
16	Nov. 18/58	3.15				20.0	3	5.9	140	5	12.0	7.0	69.6	0.095		49.2	46.9	3.0
17	June 13/59	23:30			80	17.6	8	5.7	120	4	7.5	1.0	58.0	0.079		38.4	39.2	3.5
18	Apr. 27/60	5.5					10	5.6	200	0.8							53.4	4.3
19	Sept. 28/60	5.5				30.4		5.4	180	....†							36.2	

* At intake to municipal water works plant
† Clear on sampling; 3-5 ppm turbidity after 2 days' storage

STATION NO. 45 – PETER BROWN RIVER*

20	June 12/58	24:31	.....	.....	59	19.6	2	7.1 (6.7)	.....†	.....†	.....	.....	84.4	0.115	.....	40.3	46.6	4.9

* Sampled at highway No. 45 bridge
† Dredging upstream of bridge

STATION NO. 46 – MOOSE RIVER

21	Sept. 7/49*	:19	Low tide	.....	.....	.....	4	7.6	150	15	.....	.....	144	0.197	.....	61.5	149	25.5
22	Sept. †††	:19	High tide	.....	.....	.....	4	7.6	135	10	.....	.....	149	0.203	.....	63.6	151	26.2
23	Sept. †††	:19	Low tide	.....	.....	.....	5	7.5	150	10	.....	.....	147	0.200	.....	61.5	151	26.2
24	Sept. †††	:19	High tide	.....	.....	.....	5	7.5	150	9	.....	.....	159	0.216	.....	64.6	149	25.6

† At surface
†† 12 feet below surface

STATION NO. 47 – LAKE ABITIBI

25	Aug. 24/47	:423	.....	.....	77	.....	1.1 (1.5)	7.8 (7.7)	30 (240)	..... (40)	.....	.....	83.8	0.114	.....	21.6	76.8	12.0
						Dissolved oxygen – 7.3 ppm												

TABLE II – (Continued)

Chemical Analyses of Surface Waters in the Hudson Bay Drainage Basin

(In parts per million)

Magnesium (Mg)	Iron (Fe) Total	Iron (Fe) Dissolved	Manganese (Mn)	Aluminum (Al)	Copper (Cu)	Zinc (Zn)	Alkalis Sodium (Na)	Alkalis Potassium (K)	Ammonia (NH_3)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulphate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Silica (colorimetric) (SiO_2)	Phosphate (PO_4)	Boron (B)	Hardness as $CaCO_3$ Non-carbonate	Hardness as $CaCO_3$ Total	Sum of constituents	Per cent sodium	Saturation index	Stability index	No.
below AMOS, QUEBEC – Drainage area, 1,400 square miles (concluded)																									
11.8	.....	.....	.....	.....	.....	.....	12.6	11.0	0.0	0.0	225	14.6	2.9	.....	0.4	11	.....	0.00	0.0	164	221	13	+0.8	6.7	1
12.3	.....	.....	.....	.....	.....	.....	12.0	11.2	0.0	4.4	216	14.6	2.5	.....	0.4	11	.....	....	0.0	167	222	13	+0.8	6.8	2
12.5	.....	0.32	0.02	0.0	0.0	0.5	14.0	12.6	0.1	10.2	215	15.5	2.6	0.0	0.4	11	Trace	....	0.0	172	234	14	+1.1	6.4	3
11.4	.....	.....	.....	.....	0.0	0.0	17.0	16.8	0.0	0.0	250	16.2	2.4	.....	1.0	11	0.0	0.00	0.0	172	238	16	+1.1	6.3	4
9.7	.....	.....	.....	.....	.....	.....	10.5	8.7	0.1	0.0	183	14.4	2.2	.....	0.0	12	.....	....	0.0	140	188	13	+0.7	6.9	5
1.9	2.2	0.21	0.0	0.07	0.0	0.1	1.4	0.9	0.2	0.0	12.4	11.5	1.7	0.0	0.6	3.9	0.08	....	12.3	22.5	34.4	11	−2.8	12	6
1.8	.....	.....	.....	.....	.....	.....	1.7	1.1	0.3	0.0	14.8	12.4	1.6	.....	0.4	3.6	.....	....	12.8	24.9	36.9	12	−2.4	12	7
1.9	0.76	0.17	0.0	0.0	Trace	0.05	1.8	1.3	0.2	0.0	17.8	15.1	0.9	0.0	1.0	2.1	0.02	....	12.7	27.3	40.9	12	−2.2	11.5	8
2.3	.....	0.17	0.0	0.0	Trace	0.0	2.1	1.3	.....	0.0	21.6	13.5	1.6	0.0	1.0	4.8	.....	....	13.5	31.2	46.1	12	−2.3	11	9
2.3	1.6	0.18	.....	.....	.....	.....	2.0	1.6	0.2	0.0	20.1	14.6	1.5	.....	0.8	4.2	.....	....	13.7	30.2	45.4	12	−2.2	11.5	10
2.1	1.8	.....	.....	.....	.....	.....	1.6	1.0	0.1	0.0	17.2	16.5	1.5	.....	0.1	3.4	.....	....	14.2	28.3	42.6	11	−2.1	11	11
4.6	0.02	0.0	0.04*	0.0	0.0	2.0	6.6	7.3	0.0	0.0	122	13.9	1.7	0.0	1.5	8.6	0.02	....	0.0	97.0	138	12	−0.4	8.3	12
*Total and dissolved																									
near HALET TOWNSITE, QUEBEC																									
1.2	0.69	0.02	0.0	0.0	0.0	0.05	0.9	0.7	0.1	0.0	4.3	11.0	0.8	0.0	0.0	4.0	0.01	....	8.7	12.2	23.7	13	−3.9	14	13
at BOURLAMAQUE, QUEBEC																									
2.3	.....	0.14	.....	.....	.....	.....	.....	.....	.....	0.0 (0)	29.3 (22)	8.5	0 (0.8)	.....	6.2	5.8	.....	....	4.4	28.4	.....	.....	−1.6	11	14
at MALARTIC, QUEBEC																									
1.5	0.46	.....	.....	.....	.....	.....	.....	.....	.....	0.0 (0)	7.8 (7.2)	5.9	0 (0.8)	.....	3.5	2.8	.....	....	5.8	12.2	.....	.....	−3.0	13	15
1.3	.....	0.61	0.02	0.0	0.0	0.10	0.8	0.7	.....	0.0	1.2	13.8	1.4	0.0	0.2	6.3	.....	....	13.3	14.3	29.3	9.4	−4.9	16	16
1.6	0.98	0.37	0.00	0.0	0.0	0.2	0.9	0.6	.....	0.0	2.4	11.1	1.8	0.0	0.2	3.7	.....	....	13.3	15.3	25.2	10	−4.8	15	17
1.6	0.81	0.48	0.02	0.0	Trace	0.2	1.5	0.9	0.5	0.0	2.2	16.8	2.3	0.0	0.2	8.8	.....	0.00	15.9	17.7	37.5	14	−4.8	15	18
....	.....	0.85	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.2	.....	.....	....	.....	.....	.....	.....	.....	.....	19
near LANDRIENNE, QUEBEC																									
1.7	.....	0.48	0.0	0.0	0.0	0.0	1.3	1.0	.....	0.0	19.3	5.1	2.1	0.0	0.3	4.4	.....	....	8.4	24.2	32.8	9.7	−2.2	11.5	20
at MOOSE FACTORY, ONTARIO																									
5.7	.....	.....	.....	.....	.....	.....	1.7	0.8	.....	0.0	86.6	9.9	1.4	.....	.....	5.0	.....	....	19.4	90.4	93.9	3.8	−0.8	8.8	21
5.7	.....	.....	.....	.....	.....	.....	1.7	0.8	.....	0.0	89.1	9.9	1.0	.....	.....	5.0	.....	....	20.9	93.9	96.1	3.7	−0.5	8.6	22
5.5	.....	.....	.....	.....	.....	.....	1.7	0.8	.....	0.0	89.1	10.7	1.4	.....	.....	5.0	.....	....	20.0	93.0	97.1	3.7	−0.3	8.1	23
5.9	.....	.....	.....	.....	.....	.....	1.7	0.8	.....	0.0	89.8	9.5	1.6	.....	.....	8.0	.....	....	20.6	94.2	99.7	3.7	−0.7	8.9	24
near ILE NEEPAWA, QUEBEC																									
2.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.0 (0)	39.8 (41.5)	6.7	0 (0)	.....	3.1	6.6	.....	....	9.3	41.9	.....	.....	−1.0	9.8	25

TABLE II – (Continued)

Chemical Analyses of Surface Waters in the Hudson Bay Drainage Basin

(In parts per million)

No.	Date of	Storage period	Stream discharge (Second-feet) On sampling	Stream discharge (Second-feet) Monthly mean	Water temperature (°F.)	Oxygen consumed by $KMnO_4$	Carbon dioxide (calculated) (CO_2)	pH	Color (Hazen) (Units)	Turbidity (Units)	Residue on evaporation (Dissolved solids) Dried at 105°C.	Residue on evaporation (Dissolved solids) Ignited at 105°C.	Residue on evaporation (Dissolved solids) P.P.M.	Residue on evaporation (Dissolved solids) Tons per acre-foot	Residue on evaporation (Dissolved solids) Tons per day	Loss on ignition 105°C. to 550°C.	Specific conductance K × 10⁶ at 25°C.	Calcium
STATION NO. 47 – LAKE ABITIBI																		
1	[illegible]	[illegible]	[illegible]			8.8	[illegible]	7.8	[illegible]				[illegible]	[illegible]		[illegible]	[illegible]	11.6
STATION NO. [illegible] – [illegible]																		
2	June 4/58	21:34	4,990	4,250	51	17.7	4	7.4	.....	40	11	8.7	142	0.193	1,911	48.0	118	18.3
3	June 30	16:42	980	4,250	60	.....	2	7.8	180	25	15	12	.....	.....	.....	.....	124	18.1
4	July 2	26:40	6,180	4,180	60	.....	3	7.5	140	30	15	13	.....	.....	.....	.....	124	19.0
5	Aug. 6	27:30	5,620	3,860	66	.....	3	7.5	225	25	7.7	7.0	122	0.166	1,849	46.4	110	16.7
6	Oct. 1	15:114	8,530	8,170	55	.....	3	7.5	30	52	.....	.....	.....	.....	.....	.....	115	16.9
7	Nov. 6	13:176	7,530	6,970	41	18.0	2	7.7	80	48	.....	.....	106	0.144	2,153	29.6	[illegible]	[illegible]
8	Dec. 3	12:64	8,210	6,300	33	.....	2	7.7	.....	[illegible]							[illegible]	[illegible]
9	Jan. 7/59	15:33	7,680	6,240	33	.....	4	7.4	.....	[illegible]							[illegible]	[illegible]
10	Mar. 4	9:34	8,100	6,680	33	.....	2	7.8	.....	[illegible]							[illegible]	[illegible]
11	Apr. 2	25:43	8,540	9,910	33	.....	3	7.5	[illegible]	[illegible]							[illegible]	[illegible]
12	Apr. 25	52:61	17,000	9,910	34	11.6	6	7.2	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
13	May 21	26:34	5,040	6,480	46	.....	3	7.5	[illegible]	[illegible]							[illegible]	[illegible]
STATION NO. [illegible] – [illegible]																		
14	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

*Sampled at ferry

†Records at Abitibi Canyon, Lat. 49°33'00", Long. 81°34'00": Drainage area 8,440 square miles

STATION NO. [illegible] – [illegible]																		
15	[illegible]	3 [illegible]	25:53	14,700†	8,530	58	18.7	5	7.3	[illegible]	[illegible]	2.1	1.8	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
16	Aug.	[illegible]	15:42	7,760	6,670	68	.....	5	7.4	40	20	.....	.....	.....	.....	.....	.....	[illegible]	[illegible]
17	Sept.	4	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	4	7.4	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
18	[illegible]	3	12:179	14,600	13,800	55	22.5	2	7.6	120	16	.....	.....	.....	.....	.....	.....	[illegible]	[illegible]
19	Nov.	4	15:93	8,840	11,500	42	.....	2	7.7	100	50	.....	.....	.....	.....	.....	.....	[illegible]	[illegible]
20	Dec.	3	12:64	9,760	8,080	34	.....	2	7.7	.....	52	.....	.....	.....	.....	.....	.....	[illegible]	[illegible]
21	Jan.	[illegible]	9:126	8,460	7,930	33	21.1	2	7.7	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
22	Feb.	3	16:43	8,900	8,170	38	.....	3	7.5	40	55	.....	.....	.....	.....	.....	.....	[illegible]	[illegible]
23	Mar.	3	6:15	8,980	8,620	36	.....	2	7.7	40	45	.....	.....	.....	.....	.....	.....	[illegible]	[illegible]
24	Apr.	2	25:55	10,500	13,800	.....	18.5	4	7.5	[illegible]	40	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
25	May	5	41:50	30,200	19,600	35	.....	3	7.5	100	30	.....	.....	.....	.....	.....	.....	[illegible]	[illegible]
26	[illegible]	2	27:35	8,140	7,800	50	.....	5	7.3	120	14	.....	.....	.....	.....	.....	.....	[illegible]	[illegible]

† Records at Abitibi Canyon, Lat. 49° 33' 00", Long. 81° 34' 00", Drainage area 8,440 square miles

STATION NO. [illegible] – [illegible]																		
27	Aug. 26/47*		:309	[illegible]	[illegible]	78	.....	1	7.8	40	[illegible]	[illegible]	[illegible]	[illegible]	87.1	[illegible]	[illegible]	14.6	[illegible]	[illegible]
28	June 15/59**		57:63	[illegible]	[illegible]	[illegible]	0.0	3	(2.5) [illegible]	(7.5) [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

*Sampled at Beattie Mill tap

**Sampled at wharf

STATION NO. 53 – DAGENAIS RIVER

29	[illegible]	15 [illegible]	51 58	[illegible]	[illegible]	[illegible]	18.4	5	[illegible]	[illegible]	[illegible]	44	42	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

† Partly due to iron salts

STATION NO. 54 – BELLEFEUILLE RIVER

30	Aug. 23 47		320	.....	.....	77	.....	4	7.8	75	.....	.....	.....	81.2	0.110	.....	15.8	85.9	11.6
								(3.5)	(7.4)	(260)	(30)							
							Dissolved oxygen - 6.7 ppm											

TABLE II – (Continued)

Chemical Analyses of Surface Waters in the Hudson Bay Drainage Basin

(In parts per million)

Magnesium (Mg)	Iron (Fe) Total	Iron (Fe) Dissolved	Manganese (Mn)	Aluminum (Al)	Copper (Cu)	Zinc (Zn)	Alkalis Sodium (Na)	Alkalis Potassium (K)	Ammonia (NH_3)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulphate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Silica (colorimetric) (SiO_2)	Phosphate (PO_4)	Boron (B)	Hardness as $CaCO_3$ Non-carbonate	Hardness as $CaCO_3$ Total	Sum of constituents	Per cent sodium	Saturation index	Stability index	No.
near CLERVAL, QUEBEC																									
3.7	2.3	0.68	0.0	0.09	Trace	0.0	1.2	1.5	0.1	0.0	105	9.6	1.5	0.0	0.2	4.2	0.2	.....	13.3	99.0	108	2.5	−0.2	8.2	1
at IROQUOIS FALLS, ONTARIO – Drainage area 5,040 square miles (*See* also supplement, page 58)																									
3.6	1.2	0.20	0.0	0.0	0.0	0.1	1.6	1.2	0.0	0.0	64.1	8.9	1.3	0.0	0.7	4.3	.....	.....	7.9	60.5	71.8	5.3	−1.0	9.4	2
4.1	1.4	.....	.....	.....	.....	.....	1.6	1.0	0.0	0.0	69.0	7.9	1.3	.....	0.5	4.0	.....	.....	5.4	62.0	72.5	5.0	−0.5	8.8	3
4.1	1.6	.....	.....	.....	.....	.....	1.5	0.9	.....	0.0	67.8	7.4	1.2	.....	0.5	3.8	.....	.....	8.7	64.3	74.1	4.7	−0.8	9.1	4
3.9	0.92	0.19	0.0	0.0	0.0	0.1	1.4	1.1	.....	0.0	56.0	8.9	1.1	0.0	0.6	4.2	.....	.....	11.8	57.7	65.7	4.9	−1.0	9.5	5
3.9	.....	.....	.....	.....	.....	.....	1.3	1.2	0.0	0.0	53.6	11.4	2.8	.....	0.1	3.9	.....	0.0	14.2	58.2	67.9	4.5	−1.0	9.5	6
3.9	2.7	0.09	0.0	0.0	0.0	0.0	1.6	1.0	.....	0.0	56.1	9.4	0.9	0.0	0.4	4.5	0.05	.....	12.0	58.0	66.2	5.5	−0.8	9.3	7
4.3	.....	.....	.....	.....	.....	.....	1.4	1.3	.....	0.0	58.3	9.3	0.7	.....	0.6	3.7	.....	.....	13.5	61.3	67.5	4.6	−0.8	9.3	8
4.5	.....	.....	.....	.....	.....	.....	1.8	1.8	0.0	0.0	63.3	10.0	0.9	.....	1.0	3.7	.....	.....	14.3	66.2	73.9	5.4	−1.0	9.4	9
4.8	.....	.....	.....	.....	.....	.....	1.8	1.7	.....	0.0	67.9	12.2	0.9	0.0	0.4	3.9	0.1	.....	14.9	70.6	79.5	5.1	−0.6	9.0	10
4.7	.....	.....	.....	.....	.....	.....	2.0	1.8	0.0	0.0	68.1	11.5	1.6	.....	0.8	5.2	.....	.....	15.6	71.5	82.0	5.6	−0.8	9.1	11
3.7	1.2	0.25	0.0	0.0	0.03	0.02	1.4	0.5	0.0	0.0	54.9	7.9	1.2	0.0	1.5	3.5	0.05	.....	9.6	54.6	62.9	5.2	−1.4	10	12
3.9	.....	.....	.....	.....	.....	.....	1.2	0.9	0.2	0.0	60.5	8.5	1.3	.....	0.8	5.1	.....	.....	11.3	60.9	69.5	4.0	−1.0	9.5	13
east of COCHRANE, ONTARIO																									
3.7	.....	0.25	.....	.....	.....	.....	2.1	1.5	0.0	0.0	55.3	11.7	1.5	0.0	0.4	4.4	.....	.....	13.2	58.6	70.2	7.0	−0.9	9.4	21
at ISLAND FALLS, ONTARIO																									
3.9	.....	0.18	0.0	0.0	0.0	0.0	1.5	0.8	.....	0.0	65.3	8.4	1.8	0.0	0.6	4.1	.....	.....	11.6	65.2	73.1	4.7	−1.0	9.3	15
4.3	.....	.....	.....	.....	.....	.....	1.4	0.9	0.3	0.0	69.8	8.1	1.1	.....	0.8	3.7	.....	.....	11.0	70.3	77.0	4.1	−0.9	9.2	16
4.2	.....	.....	.....	.....	.....	.....	1.2	0.6	0.05	0.0	63.1	9.8	1.2	.....	0.5	4.0	.....	.....	12.4	64.2	71.4	3.9	−1.0	9.4	17
4.2	0.26	0.15	0.0	0.0	0.0	0.0	1.6	0.8	.....	0.0	60.3	7.7	1.2	0.0	0.1	4.7	0.00	.....	15.2	64.7	69.1	5.0	−0.8	9.2	18
4.5	.....	.....	.....	.....	.....	.....	1.5	1.0	.....	0.0	73.0	7.8	1.0	.....	0.8	4.0	.....	0.00	12.5	72.4	78.1	4.2	−0.6	8.9	19
4.6	.....	.....	.....	.....	.....	.....	1.5	1.2	.....	0.0	68.1	8.4	1.0	.....	0.4	3.7	.....	.....	14.2	70.1	74.8	4.4	−0.6	8.9	20
4.7	1.3	0.24	0.0	0.0	0.0	0.0	2.1	1.0	0.0	0.0	73.9	11.4	1.1	.....	0.4	7.1	0.08	.....	14.1	74.7	86.6	5.6	−0.6	8.9	21
5.0	.....	.....	.....	.....	.....	.....	1.9	1.3	0.0	0.0	73.3	11.4	1.7	.....	0.2	4.1	.....	0.00	15.9	76.0	83.9	5.1	−0.9	9.3	22
5.1	.....	.....	.....	.....	.....	.....	1.5	1.6	.....	0.0	75.5	11.2	0.9	.....	0.3	5.8	.....	.....	16.0	77.9	86.3	3.9	−0.6	8.9	23
4.9	.....	0.29	0.0	0.0	0.0	0.0	1.9	1.6	0.0	0.0	77.8	13.8	0.8	0.0	0.3	5.8	0.02	.....	15.5	79.3	91.4	4.8	−0.7	8.9	24
3.5	.....	.....	.....	.....	.....	.....	1.0	1.0	0.2	0.0	50.3	6.9	1.1	.....	1.0	3.9	.....	.....	9.8	51.1	57.9	4.0	−1.2	9.9	25
3.6	.....	.....	.....	.....	.....	.....	1.2	0.8	0.2	0.0	59.7	7.6	2.0	.....	0.6	2.6	0.06	.....	9.7	58.7	65.5	4.2	−1.1	9.5	26
at DUPARQUET, QUEBEC																									
4.4	.....	0.01	.....	.....	.....	.....	.....	.....	.....	0.0 (0)	41.5 (39)	11.8	0 (0)	.....	3.5	5.2	.....	.....	16.0	50.0	.....	.....	−1.0	9.8	27
2.7	0.32	0.04	0.0	0.0	0.0	0.0	1.2	0.6	0.0	0.0	29.9	13.4	0.8	0.0	0.2	3.7	0.00	.....	13.5	38.0	48.1	6.2	−1.7	11	28
near PALMAROLLE, QUEBEC																									
4.6	1.3	0.33	0.0	0.0	Trace	0.0	2.6	1.7	0.1	0.0	66.8	9.6	2.6	0.0	0.0	5.2	0.07	.....	12.0	66.8	78.8	7.5	−1.0	9.3	29
west of AUTHIER, QUEBEC																									
3.2	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.0 (0)	41.5 (41.5)	7.7	0 (0)	.....	2.6	7.0	.....	.....	8.1	42.1	94.0	.....	−1.0	9.8	30

TABLE II – (Continued)

Chemical Analyses of Surface Waters in the Hudson Bay Drainage Basin

(In parts per million)

No.	Date of collection	Storage period (Days)	Stream discharge (Second-feet) On sampling date	Stream discharge (Second-feet) Monthly mean	Water temperature (°F.)	Oxygen consumed by $KMnO_4$	Carbon dioxide (calculated) (CO_2)	pH	Colour (Hazen) (Units)	Turbidity (Units)	Suspended matter Dried at 105°C.	Suspended matter Ignited at 550°C.	Residue on evaporation dried at 105°C. (Dissolved solids) P.P.M.	Residue on evaporation dried at 105°C. (Dissolved solids) Tons per acre-foot	Residue on evaporation dried at 105°C. (Dissolved solids) Tons per day	Loss on ignition at 550°C.	Specific conductance at 25°C.	Calcium (Ca)
STATION NO. 55 – LOIS RIVER*																		
1	June 15/59	24:44	.....	.....	63	14.6	6	6.8	120	20†	26†	17†	77.6	0.106	.....	44.8	70.9	9.9
STATION NO. 56 – MACAMIC LAKE																		
2	June 15/59	51:58	.....	.....	67	13.6	5	6.8	100	50	79	60	80.8	0.109	.....	37.2	59.8	8.8
STATION NO. 57 – LA SARRE RIVER*																		
3	June 15/59	51:58	.....	.....	.....	19.4	4	7.2	180	550†	64	60	133	0.181	.....	42.8	88.6	15.8
STATION NO. 58 – KESAGAMI LAKE																		
4	Feb. 14/47	20:32	.....	.....	.....	.....	5	7.4	.....	.....	.....	.....	524	0.713	.....	.....	.....	83.7
5	Mar. 3	14:23	.....	.....	.....	.....	5	7.6	.....	.....	.....	.....	495	0.673	.....	.....	.....	81.1
6	Mar. 17	17:36	.....	.....	.....	.....	.....	7.5	.....	.....	.....	.....	512	0.697	.....	.....	.....	80.8
STATION NO. 59 – CREE LAKE																		
7	Feb. 14/47	20:32	.....	.....	.....	.....	2	6.5	.....	.....	.....	.....	62.0	.....	.....	.....	.....	9.1
8	Mar. 3	14:23	.....	.....	.....	.....	4	7.3	.....	.....	.....	.....	64.5	.....	.....	.....	.....	10.0
9	Mar. 18	16:29	.....	.....	.....	.....	.....	7.2	.....	.....	.....	.....	66.5	.....	.....	.....	.....	11.4
STATION NO. 60 – WHITEFISH RIVER*																		
10	Aug. 25/47	306	.....	.....	73	.....	1 (3.0)	7.8 (7.5)	75 (140)	..... (110)	.....	.....	112	0.152	.....	26.6	94.5	13.6
							Dissolved oxygen - 6.5 ppm											
11	Feb. 24/48	:15	.....	.....	.....	.....	10	7.2	240	60	.....	.....	187	0.254	.....	58.4	155	21.3
12	Aug. 25	:26	.....	.....	.....	.....	8	7.1	.....	200	84	27	165	0.224	.....	54.0	97.7	12.0
STATION NO. 61 – LA REINE RIVER*																		
13	Aug. 24/47	:319	.....	.....	79	.....	1 (3.5)	8.1 (7.6)	80 (340)	..... (40)	.....	.....	113	0.154	.....	25.0	137 (137)	20.0
							Dissolved oxygen - 6.2 ppm											
STATION NO. 62 – WHITECLAY RIVER*																		
14	Aug. 18/59	36:64	.....	.....	63	12.0	5	7.1 (7.0)	30 (120)	4 (4)	5.3	1.3	74.0	0.101	.....	36.4	80.5	12.5
STATION NO. 63 – BLACK RIVER																		
15	Aug. 13/57	86:138	.....	.....	69	11.2	1	8.0	80	14	11.2	6.0	114	0.155	.....	30.8	155	22.2
16	June 23/58	18:25	Normal	.....	59	20.8	3	7.3	140	6	23	15	97.2	0.132	.....	48.0	93.7	13.8
17	July 23	23:23	Normal	.....	68	.....	5	7.3	130	6	.....	.....	.....	.....	.....	.....	107	16.4
18	Aug. 23	27:40	Low	.....	63.5	.....	4	7.4	110	5	.....	.....	.....	.....	.....	.....	122	18.7
19	Sept. 23	15:174	Medium	.....	61	26.0	3	7.4	140	4	9.6	5.6	96.0	0.131	.....	42.8	101	15.3
20	Oct. 23	11:102	Normal	.....	49	.....	5	7.5	160	9	.....	.....	.....	.....	.....	.....	97.8	14.9

* At municipal tap

† Precipitated during storage

* Some turbidity due to precipitated oxides

* Sampled at highway No. 45 bridge, west of La Sarre, Que.

* Sampled at power dam

* Sampled at railway bridge

* Sampled at highway No. 11 bridge.

TABLE II – (Continued)

Chemical Analyses of Surface Waters in the Hudson Bay Drainage Basin

(In parts per million)

Magnesium (Mg)	Iron (Fe) Total	Iron (Fe) Dissolved	Manganese (Mn)	Aluminum (Al)	Copper (Cu)	Zinc (Zn)	Alkalis Sodium (Na)	Alkalis Potassium (K)	Ammonia (NH_3)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulphate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Silica (colorimetric) (SiO_2)	Phosphate (PO_4)	Boron (B)	Hardness as $CaCO_3$ Non-carbonate	Hardness as $CaCO_3$ Total	Sum of constituents	Per cent sodium	Saturation index	Stability index	No.
near MACAMIC, QUEBEC																									
2.2	1.8†	0.23	0.0	0.0	Trace	0.05	1.2	0.8	.....	0.0	26.2	9.7	1.9	0.0	0.0	2.6	.....	.....	12.2	33.7	41.5	6.9	−2.2	11	1
at MACAMIC, QUEBEC																									
2.2	1.2	0.21	0.0	0.0	Trace	0.05	1.2	0.7	0.2	0.0	30.2	11.2	1.9	0.0	0.0	2.7	0.05	.....	11.2	36.0	45.9	6.5	−2.1	11	2
near LA SARRE, QUEBEC																									
3.2	1.9†	0.62	0.0	0.0	Trace	0.05	2.0	1.8	0.1	0.0	40.1	12.2	2.4	0.0	0.3	4.5	0.06	.....	14.7	47.6	60.7	7.8	−1.5	10	3
at NORMETAL, QUEBEC																									
23.1	0.45	.....	.....	.....	.....	15.0	as Na 21.0		.....	0.0	110	256	6.0	.....	5.2	11	.....	.....	236	326	460	.....	−0.2	7.8	4
23.6	0.38	.....	.....	0.1	.....	14.8	36.3		.....	0.0	114	250	7.5	.....	5.2	9.0	0.0	.....	235	329	471	.....	0.0	7.6	5
24.0	0.30	.....	.....	.....	.....	16.0	24.7		.....	0.0	109	267	6.0	.....	7.0	11	.....	.....	236	325	.....	.....	.....	.....	6
near NORMETAL, QUEBEC																									
2.7	0.05	.....	.....	.....	.....	0.0	as Na 3.4		.....	0.0	36.6	5.4	0.3	.....	4.4	6.4	0.00	.....	6.1	36.1	50.6	.....	−2.4	11	7
3.1	0.03	.....	.....	.....	.....	.....	8.1		.....	0.0	40.7	5.8	.....	.....	3.5	5.0	0.00	.....	4.4	37.8	55.5	.....	−1.6	10.5	8
3.5	0.03	.....	.....	.....	.....	.....	2.6		.....	0.0	43.9	8.6	.....	.....	4.4	7.0	.....	.....	6.8	42.8	.....	.....	.....	.....	9
at LA SARRE, QUEBEC																									
3.9	2.0	.....	.....	.....	.....	.....	.....	.....	.....	0.0 (0)	48.8 (45)	8.1	0 (0)	.....	3.5	7.3	.....	.....	10.0	50.0	.....	.....	−0.9	9.6	10
7.5	3.6	.....	.....	.....	.....	.....	3.5	2.0	.....	0.0	88.8	11.1	0	.....	0.4	4.4 (39)†	.....	.....	11.6	84.0	94.2	8.5	−1.1	9.4	11
8.3	5.7	2.0	.....	.....	.....	.....	3.0	3.0	.....	0.0	55.2	14.8	2.5	.....	7.5	(50)†	.....	.....	18.8	64.0	88.2	8.7	−1.8	10.5	12
† Gravemetric silica																									
at LA REINE, QUEBEC																									
5.3	0.39	.....	.....	.....	.....	.....	.....	.....	.....	0.0	86.4	3.9	0	.....	1.7	10	.....	.....	0.9	71.7	.....	.....	−0.2	8.5	13
near RAMORE, QUEBEC																									
2.7	0.25	0.04	0.0	0.0	.....	.....	1.3	0.4	0.1	0.0 (0)	39.1 (37)	7.1	0.7	0.0	0.4	3.4	.....	.....	7.7	39.8	46.8	6.5	−1.7	10.5	14
at MATHESON, ONTARIO																									
5.3	.....	0.06	0.0	0.0	0.0	0.0	2.2	0.8	0.0	0.0	90.7	7.8	1.5	.....	0.6	5.1	.....	.....	4.0	78.4	90.7	5.6	−0.2	8.4	15
3.3	0.92	0.10	0.0	0.0	0.0	0.0	1.3	0.5	.....	0.0	48.3	9.0	0.6	0.0	0.4	3.3	.....	.....	8.4	48.0	56.1	5.5	−1.3	9.9	16
3.9	.....	.....	.....	.....	.....	.....	1.2	0.4	0.1	0.0	58.6	6.7	1.3	.....	0.6	3.7	.....	.....	8.9	57.0	63.1	4.3	−1.2	9.7	17
4.5	.....	.....	.....	.....	.....	.....	1.6	0.6	0.1	0.0	68.3	6.1	2.1	.....	1.6	4.9	.....	.....	9.2	65.2	73.7	5.9	−1.0	9.4	18
3.9	0.39	0.15	0.0	0.0	0.0	0.05	1.4	0.4	0.1	0.0	54.5	6.9	0.8	0.0	0.3	5.5	0.00	0.00	9.5	54.2	61.5	5.2	−1.1	9.6	19
3.9	.....	.....	.....	.....	.....	.....	1.4	0.5	.....	0.0	48.9	5.7	1.3	.....	0.4	5.1	.....	.....	13.1	53.2	57.3	5.4	−1.2	9.9	20

TABLE II – (Continued)

Chemical Analyses of Surface Waters in the Hudson Bay Drainage Basin

(In parts per million)

No.	Date of collection	Storage (Days)	Stream discharge (second-feet): On sampling date	Stream discharge (second-feet): Monthly mean	Water temperature (°F.)	Oxygen consumed by $KMnO_4$	Carbon dioxide (calculated) (CO_2)	pH	Colour (Hazen Units)	Turbidity (Units)	Suspended matter: Dried at 105°C.	Suspended matter: Ignited at 550°C.	Residue on evaporation dried at 105°C. (Dissolved solids): P.P.M.	Tons per acre-foot	Tons per day	Loss on ignition at 550°C.	Specific conductance k × 10⁶ at 25°C.	Calcium (Ca)
	STATION NO. [illegible] – [illegible]																	
1	May [illegible]	[illegible]		—	42	15.5	1	[illegible]	[illegible]	[illegible]	52	46	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]
2	June [illegible]	[illegible]	Normal		[illegible]		1	7.8	[illegible]	[illegible]							[illegible]	[illegible]
	STATION NO. [illegible] – [illegible]*																	
3	Aug. 11/59	21:24			[illegible]	5.8	2	7.9 (8.3)	15 (40)	5 (5-10)	8.4	2.1	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]
	* [illegible]																	
	STATION NO. [illegible] – [illegible]*																	
4	Aug. 11/59	21:24			59	14.4	3	7.9 (7.5)	55	13 (35)	12.0	9.5	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]
	* Sampled at highway No. 101 bridge																	
	STATION NO. [illegible] – FREDERICK HOUSE RIVER*																	
5	Aug. 11/59	21:24			65	12.2	3	7.7 (7.5)	60 (40)	47 (100)	21.5	16.1	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]
	* Sampled at highway No. [illegible] bridge																	
	STATION NO. 67 – FREDERICK HOUSE RIVER*																	
6	Aug. 12/57	85:98					7	7.5	120	62							[illegible]	[illegible]
	* Sampled at highway No. 101 bridge																	
	STATION NO. 68 – FREDERICK HOUSE RIVER		Gauge level (feet)															
7	Aug. 11/58	22:25	906.15				3	7.7	180	50	11	11	160	[illegible]		45.2	164	[illegible]
8	Sept. 10	14:126	901.12				4	7.5	60	42							147	[illegible]
9	Oct. 10	6:109	901.23		45		[illegible]	8.0		75							[illegible]	[illegible]
10	Nov. 14	5:136	902.43		39	18.2	[illegible]	8.0	70*	60	33	24	164	0.223		[illegible]	[illegible]	[illegible]
11	Dec. 10	29:61	902.15		33		3	7.7	100*	45							[illegible]	[illegible]
12	Jan. 9/59	6:31	900.73		34		1	8.1	100*	40							[illegible]	[illegible]
13	Feb. 10	9:56	[illegible].84		34	21.1	2	7.9	50*	33	34	29	169	0.230		[illegible]	[illegible]	[illegible]
14	Mar. 13	10:25	896.05		33		4	7.5	40*	27							178	[illegible]
15	Apr. 10	27:35	883.57		35		2	7.8	100*	30			170	0.231		[illegible]	[illegible]	[illegible]
16	May 25	31:53	901.56		58	14.5	3	7.5	90	13	22	17	114	[illegible]		[illegible]	231	[illegible]
17	June 12	18:35	902.04		71		3	7.5	120	33							137	[illegible]
18	July 17	5:20	899.39		75		1	8.0	80	40							152	[illegible]
	* Colloids present																	
	STATION NO. [illegible] – FREDERICK HOUSE RIVER*																	
19	Aug. 10/57	87:21			71.5		7	7.4 (7.2)	120	27			147	[illegible]		[illegible]	182	[illegible]
	* From shore at highway No. 11 crossing																	
	STATION NO. [illegible] – PORCUPINE LAKE*																	
20	Aug. 11/59	21:24			70	12.6	[illegible]	8.1 (8.3)	35 (40)	2 (3)			340	0.462		[illegible]	[illegible]	[illegible]
	* Sampled at airbase from shore																	
	STATION NO. 71 – BOB'S LAKE																	
21	Aug. 11/59	21:24			59	12.6	5	7.5 (7.2)	30 (30)	1 (5)			137	0.186		62.6	[illegible]	[illegible]
22	Aug. 15/63	[illegible]			[illegible]		3	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]		[illegible]	[illegible]	[illegible]

TABLE II – (Continued)

Chemical Analyses of Surface Waters in the Hudson Bay Drainage Basin

(In parts per million)

Magnesium (Mg)	Iron (Fe) Total	Iron (Fe) Dissolved	Manganese (Mn)	Aluminum (Al)	Copper (Cu)	Zinc (Zn)	Alkalis Sodium (Na)	Alkalis Potassium (K)	Ammonia (NH_3)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulphate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Silica (colorimetric) (SiO_2)	Phosphate (PO_4)	Boron (B)	Hardness as $CaCO_3$ Non-carbonate	Hardness as $CaCO_3$ Total	Sum of constituents	Per cent sodium	Saturation index	Stability index	No.
at MATHESON, ONTARIO (concluded)																									
2.3	0.80	0.11	0.0	0.0	Trace	0.0	0.9	0.8	0.1	0.0	28.3	6.3	0.5	0.0	0.6	4.8	0.02	.....	9.2	32.4	39.5	5.5	−1.4	10	1
3.5	.....	.....	.....	.....	.....	.....	1.6	0.6	0.1	0.0	52.9	6.0	2.0	.....	0.2	3.6	0.06	0.00	7.9	51.3	58.4	6.3	−0.9	9.4	2
west of MATHESON, ONTARIO																									
6.7	0.13	0.07	0.0	0.14	Trace	0.0	1.7	0.6	0.0	0.0 (0)	114 (116)	6.2	1.5	0.0	0.0	6.7	.....	.....	7.3	100 (110)	109	3.5	−0.1	8.1	3
near SHILLINGTON, ONTARIO																									
7.5	0.32	0.07	0.0	0.0	0.05	0.0	1.8	0.8	0.1	0.0	126	4.5	1.3	0.0	0.8	4.4	.....	.....	7.0	110	115	3.4	0.0	7.9	4
east of HOYLE, ONTARIO																									
4.8	1.2	0.11	0.0	0.0	0.01	0.0	1.4	0.9	0.0	0.0 (0)	91.3 (92)	8.0	1.4	0.0	0.2	2.3	.....	.....	10.7 (15)	85.6 (90)	90.5	3.4	−0.4	8.5	5
at CONNAUGHT, ONTARIO																									
4.5	.....	0.34	.....	.....	.....	.....	1.5	1.2	0.0	0.0	85.2	10.0	1.7	0.0	0.6	4.7	.....	.....	12.2	82.1	92.0	3.8	−0.6	8.7	6
at dam below FREDERICK HOUSE LAKE, ONTARIO																									
4.8	1.2	0.23	0.0	0.0	0.0	0.0	1.8	1.4	.....	0.0	88.0	10.4	1.9	0.0	0.8	2.2	.....	.....	13.4	85.6	93.3	4.3	−0.4	8.5	7
4.6	.....	.....	.....	.....	.....	.....	1.4	0.8	.....	0.0	80.5	10.1	1.0	.....	0.5	3.4	.....	.....	13.3	79.3	85.6	3.6	−0.7	8.9	8
4.7	.....	.....	.....	.....	.....	.....	2.0	1.1	.....	0.0	99.2	9.2	1.0	.....	2.0	3.3	.....	0.1	9.5	90.9	101	4.5	0.0	8.0	9
5.0	0.46	0.23	0.0	0.0	0.0	0.0	2.1	1.1	.....	0.0	87.2	9.3	2.3	0.0	0.2	4.3	.....	.....	14.2	85.7	93.5	5.0	−0.2	8.4	10
5.8	.....	.....	.....	.....	.....	.....	1.9	1.2	0.05	0.0	87.0	8.4	1.5	.....	1.0	4.6	.....	.....	17.1	88.5	93.1	4.4	−0.5	8.7	11
5.9	.....	.....	.....	.....	.....	.....	2.2	1.2	0.05	0.0	91.2	13.4	2.1	.....	0.8	4.3	.....	.....	20.1	94.9	103	4.7	0.0	8.1	12
6.3	.....	0.20	0.0	0.0	Trace	0.0	1.8	0.9	0.1	0.0	93.6	11.0	1.7	0.0	0.3	5.3	0.06	.....	20.2	97.0	102	3.8	−0.3	8.5	13
6.3	.....	.....	.....	.....	.....	.....	1.7	0.7	0.2	0.0	97.4	10.7	1.6	.....	0.4	5.8	0.13	.....	18.4	98.3	104	3.6	−0.6	8.7	14
7.1	.....	.....	.....	.....	.....	.....	1.8	0.4	0.2	0.0	117	12.4	1.5	.....	1.0	7.3	0.00	.....	17.1	113	123	3.3	−0.1	8.0	15
3.8	1.7	0.06	0.0	0.05	0.0	0.0	2.9	1.5	0.2	0.0	57.0	10.4	3.8	0.0	3.0	2.4	0.09	.....	14.0	60.8	74.2	9.1	−1.0	9.5	16
4.0	.....	.....	.....	.....	.....	.....	2.0	1.4	0.3	0.0	65.8	11.1	2.3	.....	0.4	2.1	0.07	.....	13.8	67.8	76.4	5.9	−0.8	9.1	17
4.0	.....	.....	.....	.....	.....	.....	1.7	1.1	0.1	0.0	79.4	10.0	2.2	.....	0.8	2.2	.....	.....	13.0	78.1	85.8	4.4	−0.1	8.2	18
west of COCHRANE, ONTARIO																									
5.1	.....	0.10	0.0	0.0	Trace	0.05	2.8	1.6	0.0	0.0	99.1	11.2	2.8	0.0	1.5	5.3	.....	.....	10.0	91.3 (91.5)	107	6.1	−0.7	8.8	19
at SOUTH PORCUPINE, ONTARIO																									
18.3	0.26	0.01	0.0	0.04	0.02	0.0	23.0	3.8	0.2	0.0	132	116	18.9	0.0	1.0	3.5	.....	.....	98.3	207 (210)	302	19	+0.4	7.0	20
near PORCUPINE, ONTARIO																									
7.1	0.12	0.01	0.0	0.0	Trace	0.0	5.0	1.5	0.3	0.0	104	6.6	11.1	0.0	0.4	1.7	.....	.....	11.6	96.6 (98)	87.1	9.9	−0.5	8.5	21
7.2	0.08	0.01	0.0	0.01	.....	.....	5.9	0.6	0.0	0.0	85.3	7.7	9.5	0.12	0.7	0.3	0.01	.....	10.9	80.9	94.7	14	−0.5	8.7	22

TABLE II – (Continued)

Chemical Analyses of Surface Waters in the Hudson Bay Drainage Basin

(In parts per million)

No.	Date of collection	Time of collection	Stream discharge (Second-feet) Instantaneous date	Stream discharge (Second-feet) Monthly mean	Water temperature (°F.)	Oxygen consumed by $KMnO_4$	Carbon dioxide (calculated) (CO_2)	pH	Colour Hazen (Units)	Turbidity (Units)	Suspended matter Dried at 105°C.	Suspended matter Ignited at 55.0°C.	Residue on evaporation dried at 180°C. (Dissolved solids) P.P.M.	Residue on evaporation dried at 180°C. (Dissolved solids) Tons per acre-foot	Residue on evaporation dried at 180°C. (Dissolved solids) Tons per day	Loss on ignition at 55.0°C.	Specific conductance K × 10^6 at 25°C.	Hardness as CaCO₃ (Ca)
		(Days)																
STATION No. 72 – [illegible] RIVER*																		
1	Aug. 11/59	20:24	[illegible]	[illegible]	77	21.3	2	8.6 (7.8)	125 (250)	3 (6)	7.0	[illegible]	116	0.158		57.2	[illegible]	51.1
STATION No. 74 – [illegible] LAKE																		
2	Aug. 12/59	20:23			64.5	26.2	4	7.3 (7.2)	140 (240)	0.8 (1.2)			126	0.172		46.5	124	53.9
STATION No. 75 – [illegible] RIVER*																		
3	Aug. 9/59	08:120			74	28.7	3	7.6 (7.6)	200 (450)	5.4			111	0.151		49.2	111	57.9
4	Aug. 12/59	22:29			70	33.6	6	7.4 (6.9)	240 (400)	1.5 (3)			122	0.166		76.5	136	72.1
STATION No. 75 – MINISINAKWA (MATTAGAMI) RIVER																		
5	Aug. 21/58	7:15						7.2								76.7		
6	Sept. 27	11:16					2	7.6	35	0.8						88.4		52.8
7	Oct. 28	7:00			50		2	7.6	45	0						85.4		52.8
8	Nov. 24	11:129			45	13.4	1	7.7	80	0.8			78.0	0.106		52.4	82.9	51.9
9	Dec. 8	[illegible]			42		2	7.4	55	0							84.9	51.7
10	Jan. 20	No sample taken																
11	Feb. 2/59	17:44			32		5	7.1	45	0							77.2	51.1
12	Mar. 4	5:44			40		3	7.3	40	0.7							80.6	53.1
13	Apr. 6	6:42			35		3	7.3	50	0.7							81.5	53.9
14	May 6	17:46			35		5	7.0	55	0.7							60.7	39.4
15	June 17	13:40			60	9.8	2	7.4	50	1			65.2	0.089		34.4	72.1	50.6
16	July 17	8:20			70		2	7.5	50	0.8							77.0	51.1
STATION No. 76 – MATTAGAMI RIVER*																		
17	Oct. 26/54					12.8	3	7.3	55	4							85.4	53.6
18	Nov.	No sample taken																
19	Dec. 21	7:20	Normal		34	11.6	3	7.4	80	6	3.5	0.0	73.6	0.100		26.4	89.2	13.1
20	Jan. 18/55	10:17	Normal		34	11.0	3	7.4	70	0			76.4	0.104		40.8	88.7	12.7
21	Feb. 22	7:12	Normal		32	9.8	2	7.5	70	2							95.6	13.6
22	Mar. 23	3:15	Normal		32	11.0	3	7.4	50	0.3			73.6	0.100		26.0	91.1	12.9
23	Apr. 18	7:10	Normal		38		4	7.1	65	3							68.7	9.6
24	May 24	6:16	46" < N		53	10.8	2	7.6	50	3	9.1	3.2	82.4	0.112		44.4	91.7	14.2
25	June 21	15:20	41" < N		78			7.6	45	0							90.5	12.7
26	July 21	4:40	46" < N		78			7.4	45	3	7.3	3.7	74.8	0.102		28.8	84.2	11.8
27	Aug. 25	5:19	48" < N		70			7.5	40	0							89.4	14.5
28	Sept. 21	2:27	50" < N		60	17.0		7.6	48	0.3			89.6	0.122		48.0	111	17.2
29	Aug. 13/57	86:118			67	9.1	1	7.8	50	1			66.4	0.090		11.2	97.5	13.7
30	Aug. 11/59	21:24			65	10.4	3	7.2	40	2			80.4	0.109		26.4	92.4	12.2
STATION No. 77 – MATTAGAMI RIVER*																		
			Gauge level (ft)															
31	Aug. 11/58	22:25	844.0			8.9	4	7.3	45	1			70.4	0.096		21.2	101	14.6
32	Sept. 10	14:126	843.9		57		5	7.3	110	2							117	17.5
33	Oct. 10	6:109	844.0		45		3	7.5	80	1							114	16.3
34	Nov. 10	9:140	844.6		38	15.7	2	7.5	70	1			84.4	0.115		40.0	103	14.0
35	Dec. 10	9:61	844.4		33		3	7.5	50	0							104	15.5
36	Jan. 13/59	17:57	845.0		33		5	7.2	50	0							113	16.6
37	Feb. 10	9:56			33	11.5	2	7.6	50	0			82.8	0.113		28.0	106	15.8
38	Mar. 10	13:28	844.7		33		4	7.3	45	2							108	15.6
39	Apr. 10	27:35	844.2		35		3	7.3	40	1			92.4	0.126	210	19.2	104	15.6

*Sampled at highway No. 101 bridge.

*Sampled at waterworks intake

*Sampled at powerhouse dam

TABLE II – (Continued)

Chemical Analyses of Surface Waters in the Hudson Bay Drainage Basin

(In parts per million)

Magnesium (Mg)	Iron (Fe) Total	Iron (Fe) Dissolved	Manganese (Mn)	Aluminum (Al)	Copper (Cu)	Zinc (Zn)	Alkalis Sodium (Na)	Alkalis Potassium (K)	Ammonia (NH_3)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulphate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Silica (colorimetric) (SiO_2)	Phosphate (PO_4)	Boron (B)	Hardness as $CaCO_3$ Non-carbonate	Hardness as $CaCO_3$ Total	Sum on constituents	Per cent sodium	Saturation index	Stability index	No.
at HOYLE, ONTARIO																									
11.2	0.14	0.03	0.0	0.0	0.08	0.0	8.5	2.4	0.2	0.0	146	29.8	7.9	0.0	0.4	3.4	.....	.....	29.4	149	177	11	+0.3	7.4	1
near BERYLVALE, ONTARIO																									
3.9	0.12	0.11	0.0	0.0	0.0	0.0	3.5	0.8	0.5	0.0	53.4	7.7	8.3	0.0	0.3	1.2	.....	.....	14.4	58.2 (60)	69.0	11	−1.2	9.7	2
near DRIFTWOOD, ONTARIO																									
4.9	.....	0.14	0.0	0.0	Trace	0.05	1.3	0.3	0.0	0.0	68.0	1.6	2.5	0.0	0.3	3.0	.....	.....	9.0	64.8 (64)	65.5	4.1	−0.8	9.2	3
4.1	0.35	0.16	0.0	0.0	Trace	0.0	1.1	0.4	0.8	0.0	50.3	2.3	1.6	0.0	0.4	3.5	.....	.....	14.0	55.3	53.7	4.1	−1.4	9.9	4
at GOGAMA, ONTARIO																									
.....	.....	.....	0.0	.....	.....	.....	1.4	.....	.....	0.0	33.9	.....	1.8	.....	.....	2.7	.....	.....	5.0	32.8	.....	.....	.....	.....	5
2.5	.....	.....	.....	.....	.....	.....	1.0	0.4	.....	0.0	41.2	8.9	1.1	.....	.....	5.5	.....	0.00	8.4	42.2	52.6	4.8	−1.3	10	6
2.8	.....	.....	.....	.....	.....	.....	0.9	0.4	.....	0.0	40.1	7.9	0.5	.....	0.6	3.9	.....	.....	9.3	42.2	49.0	4.4	−1.2	10	7
3.2	.....	0.08	0.0	0.0	0.0	0.0	1.1	0.4	0.1	0.0	37.8	7.2	1.3	0.0	0.5	4.3	0.01	.....	11.9	42.9	48.6	5.2	−1.2	10	8
3.0	.....	.....	.....	.....	.....	.....	1.0	0.4	0.1	0.0	36.6	8.5	0.7	.....	0.6	3.9	.....	.....	11.5	41.5	47.8	4.9	−1.4	10	9
																									10
2.8	.....	.....	.....	.....	.....	.....	0.9	0.4	0.1	0.0	34.3	7.9	0.5	.....	0.0	4.9	.....	.....	11.1	39.2	45.4	4.7	−1.9	11	11
2.9	.....	.....	.....	.....	.....	.....	0.9	0.4	0.2	0.0	34.7	9.0	0.6	.....	0.2	4.5	0.05	.....	11.1	39.6	46.7	4.6	−1.6	10.5	12
2.5	.....	.....	.....	.....	.....	.....	1.2	0.7	0.05	0.0	32.4	10.1	1.3	.....	1.5	4.7	0.00	.....	10.9	37.5	48.9	6.4	−1.6	10.5	13
1.9	.....	.....	.....	.....	.....	.....	0.9	0.4	0.1	0.0	24.7	8.0	0.5	.....	0.6	4.5	.....	0.00	8.5	28.8	37.4	6.3	−2.2	11	14
2.6	0.44	0.04	0.0	0.09	0.0	0.0	0.8	0.4	0.2	0.0	32.7	7.1	1.3	0.0	0.0	3.5	0.06	.....	8.8	35.6	42.0	4.5	−1.4	10	15
2.3	.....	.....	.....	.....	.....	.....	1.0	0.4	0.1	0.0	35.8	7.4	1.0	.....	0.0	3.2	.....	.....	7.8	37.2	44.0	5.5	−1.3	10	16
at TIMMINS, ONTARIO																									
2.6	.....	.....	.....	.....	.....	.....	1.6	0.5	.....	0.0	39.2	4.9	2.8	.....	0.4	5.3	.....	.....	7.4	39.6	49.0	8.0	−1.5	10	17
																									18
2.8	.....	0.1	0.0	0.0	0.0	.....	0.8	0.4	.....	0.0	46.7	6.6	0.3	0.0	0.4	4.1	.....	.....	5.9	44.2	51.6	3.7	−1.2	9.8	19
2.7	.....	0.08	0.0	0.0	0.0	.....	0.8	0.4	.....	0.0	45.2	6.9	0.2	0.1	0.6	4.3	.....	.....	5.7	42.8	51.1	3.9	−1.4	10	20
2.9	.....	.....	.....	.....	.....	.....	0.9	0.4	0.2	0.0	45.2	8.3	0.9	.....	0.6	4.0	.....	.....	8.8	45.9	53.9	4.0	−0.5	9.3	21
3.0	.....	0.07	0.0	0.0	0.0	.....	0.9	0.5	.....	0.0	44.9	6.0	0.6	0.1	0.5	4.5	.....	.....	7.7	44.5	51.2	4.1	−1.4	10	22
2.1	.....	.....	.....	.....	.....	.....	0.6	0.7	.....	0.0	29.4	8.0	0.4	.....	0.4	4.4	.....	.....	8.5	32.6	40.7	3.8	−1.9	11	23
2.2	.....	0.04	0.0	0.0	0.0	.....	0.7	0.4	0.3	0.0	45.6	6.0	1.9	0.0	0.6	3.0	.....	.....	7.1	44.5	51.5	3.3	−1.0	9.6	24
2.1	.....	.....	.....	.....	.....	.....	0.9	0.7	.....	0.0	41.1	7.1	0.4	.....	0.8	4.2	.....	.....	6.6	40.3	49.1	4.5	−1.1	9.8	25
2.1	.....	0.03	0.0	0.03	0.0	.....	0.9	0.6	0.0	0.0	39.0	5.5	1.2	0.0	0.8	4.4	.....	.....	6.1	38.1	46.6	4.8	−1.3	10	26
1.5	.....	.....	.....	.....	.....	.....	0.9	0.5	0.15	0.0	44.6	5.6	0.5	.....	0.8	4.2	.....	.....	5.8	42.4	50.5	4.3	−1.1	9.7	27
2.6	.....	0.05	0.0	0.0	Trace	0.0	0.9	0.5	0.0	0.0	57.9	5.6	0.9	0.0	0.8	4.3	.....	.....	6.1	53.6	61.4	3.5	−0.9	9.4	28
2.9	.....	0.06	Trace	0.0	Trace	0.05	1.3	0.7	0.0	0.0	42.2	8.4	4.4	0.0	0.2	4.6	.....	.....	11.5	46.1	57.1	4.8	0.9	9.6	29
3.1	0.13	0.04	0.01	0.01	0.10	0.05	1.0	0.6	0.3	0.0	38.3	6.9	4.1	0.0	0.1	3.9	.....	.....	11.8	43.2	51.0	4.7	−1.6	10	30
at SANDY FALLS, near TIMMINS, ONTARIO																									
3.3	.....	0.03	0.0	0.0	0.0	0.0	0.9	0.5	0.2	0.0	50.5	8.0	1.0	0.0	0.3	5.1	.....	.....	8.6	50.0	58.6	3.7	−1.3	9.9	31
4.1	.....	.....	.....	.....	.....	.....	1.2	0.4	0.1	0.0	60.1	9.5	1.0	.....	0.8	4.2	.....	.....	12.2	60.5	67.7	4.1	−1.2	9.7	32
4.2	.....	.....	.....	.....	.....	.....	1.3	0.4	0.2	0.0	53.1	8.5	1.6	.....	1.0	3.8	.....	0.05	14.3	57.9	63.3	4.6	−1.0	9.5	33
3.6	.....	0.05	0.0	0.0	0.0	0.0	1.7	0.8	0.1	0.0	48.2	8.1	1.8	0.0	0.5	4.2	0.03	.....	10.2	49.7	58.5	6.8	−1.2	9.9	34
3.8	.....	.....	.....	.....	.....	.....	0.9	0.4	0.0	0.0	51.7	8.0	0.8	.....	0.8	4.5	.....	.....	11.9	54.3	60.1	3.4	−1.1	9.7	35
3.9	.....	.....	.....	.....	.....	.....	1.0	0.3	0.1	0.0	56.6	9.3	1.3	.....	0.4	4.5	.....	.....	11.1	57.5	65.1	3.6	−1.3	9.8	36
4.0	.....	0.04	0.0	0.0	0.0	0.0	1.0	0.3	0.1	0.0	53.3	8.5	0.8	0.0	0.5	6.3	0.06	.....	12.2	55.9	63.5	3.7	−1.1	9.8	37
4.1	.....	.....	.....	.....	.....	.....	1.1	0.4	0.1	0.0	52.3	10.1	0.9	.....	0.4	4.1	0.16	.....	12.9	55.8	62.4	4.1	−1.3	9.9	38
3.8	.....	.....	.....	.....	.....	.....	1.2	0.6	0.1	0.0	52.8	10.2	0.7	.....	0.8	5.4	0.00	.....	11.2	54.5	64.3	4.5	−1.0	9.7	39

TABLE II – (Continued)

Chemical Analyses of Surface Waters in the Hudson Bay Drainage Basin

(In parts per million)

No.	Date of collection	Storage period (Days)	Stream discharge (cubic feet per second): On sampling date	Stream discharge (cubic feet per second): Monthly mean	Water temperature (°F.)	Oxygen consumed (by $KMnO_4$)	Carbon dioxide (calculated) (CO_2)	pH	Colour (Hazen) (Units)	Turbidity (Units)	Suspended matter: Dried at 105°C.	Suspended matter: Ignited at 500°C.	Residue on evaporation dried at 105°C. (Dissolved solids): P.P.M.	Residue on evaporation dried at 105°C. (Dissolved solids): Tons per acre-foot	Residue on evaporation dried at 105°C. (Dissolved solids): Tons per day	Loss on ignition at 500°C.	Specific conductance at 25°C.	Alkalinity
			Gauge level (ft)															
																		STATION NO. 77 – MATTAGAMI RIVER*
1	May 12/59	23:43	847.1		54	14.3	4	7.1	80	4			84.4					
2	June 10	20:17	844.7		68		4	7.1	80	2								
3	June 10	9:27	843.8		68		3	7.4	50	0								

* Sampled at powerhouse dam

																		STATION NO. 78 – MATTAGAMI RIVER*
4	Aug. 1/58	90:107	1,810	1,740	67.5	10.6	3	7.7 (8.2)	35 (80)	0.4			125					
5	July 23/58	27:44	1,520	2,090	72	17.7	4	7.3	140	2			86.6					
6	Aug. 22	28:122	1,550	1,820	63		4	7.4	60	0.9								
7	Sept.	No sample taken																
8	Oct. 25	10:80	4,190	4,250	45	24.2	3	7.4	120	3			98.8					
9	Nov. 26	12:72	3,770	4,220	33		1.5	7.7	120	0.9								
10	Dec. 31	15:40	2,980	3,160	33		3	7.7	65	0								
11	Feb. 23/59	14:43	2,350	3,070	33	12.2	2	7.6	40	0.7			80.8					
12	Mar. 30	10:46	2,480	2,160	34		2	7.6	50	0.4								
13	Apr.	No sample taken																
14	May 22	25:33	5,970	8,410	46		2	7.6	100	4								
15	June	No sample taken																
16	July 30	22:27	1,740	1,770	73	12.2	4	7.3	60	2			88.0					
17	Aug. 12	23:29	1,240	2,080	67	12.0	3	7.1 (6.9)	55 (65)	2 (6.5)			97.2					

* Sampled at powerhouse dam
† Sampled at highway No. 11 bridge

																		STATION NO. 79 – MATTAGAMI RIVER*
18	July 2/58	26:54	19,400	12,500	62	22.2	3	7.5	140	1			106	0.144	5,546	46.8	119	18.4
19	July 9	29:47	14,000	12,500	63		6	7.2	160	0.8							115	18.6
20	July 28	23:39	6,320	12,500	72		2	7.8	150	0.9							124	20.3
21	Aug. 25	24:196	7,960	7,330	58	27.4	9	7.0	140	2			124	0.169	2,662	59.2	116	18.3
22	Sept. 24	12:121	7,020	15,000	56		5	7.3	170	2							125	19.4
23	Oct. 20	14:105	16,400	15,400	41		4	7.4	175	2							113	18.3
24	Nov. 24	14:128	19,700	17,300	33	26.7	2	7.6	140	2			140	0.190	7,438	97.6	105	16.6
25	Dec. 29	17:42	6,000	7,650	33		7	7.2	100	0							145	21.6
26	Jan. 19/59	10:51	5,300	5,240	33		6	7.2	80	0							146	22.0
27	Feb. 16	14:50	4,840	4,780	33	31.3	5	7.4	60	2			130	0.177	1,697	58.4	147	22.5
28	Mar. 16	7:22	5,070	5,080	33		9	7.1	50	2							147	22.4
29	Apr. 13	24:32	4,870	10,100	33		10	7.1	60	2			145			57.2	153	23.3
30	May 11	36:44	73,900	46,900	45	19.0	9	6.9	100	11	26	20	82.8	0.113	16,503	47.2	81.5	12.3
31	June 8	22:39	20,100	15,200	58		6	7.1	100	2							101	15.3
32	July 13	7:24	5,040	4,890	66		5	7.3	80	2							128	19.9
33	Aug. 10	11:16	5,170	6,020	67	37.0	6	7.3	140	0.8			130	0.177	1,813	72.8	142	22.1
34	Sept. 14	9:42	5,990	7,900	57		5	7.3	140	1							121	20.4
35	Oct. 19	9:14	11,100	14,400	46		7	7.2	140	2							121	20.4
36	Nov. 9	14:115	16,700	13,700	33	34.0	5	7.2	120	2							106	16.6
37	Dec. 7	36:87	7,260	6,650	33		6	7.2	80	0.8							128	20.8
38	Jan. 4/60	14:122	5,610	5,510	33		9	7.1	65	2							130	21.3
39	Feb. 8	14:98	4,910	5,150	33		11	7.0	55	2							142	23.2
40	Mar. 28	4:50	5,590	5,520	33		11	7.0	45	2							145	23.2
41	Apr. 5		Flood	19,300			4	7.2	110	15							86	12.4
42	May	No sample taken		101,000														
43	June 6	7:31	30,700	22,000	59		6	7.1	100	6							88.4	14.4
44	July 4	10:14	10,000	8,020	61		6	7.2	80	4							100	17.3
45	Aug. 22	44:227	7,880	9,040	70	35.2	3	7.6	180	1			116	0.158	2,485	55.2	118	18.5
46	Sept. 26	148:192	5,830	5,900	56		4	7.5	80	2							141	22.0
47	Oct. 24	92:140	6,140	7,330	36		12	7.0	140	0.4							131	20.3
48	Nov. 28	44:126	11,300	12,000	33		3	7.5	180	0.8			116	0.158	3,535		117	17.4

* Sampled at pumphouse dam

																		STATION NO. 80 – GROUNDHOG RIVER
49	June 24/58	10:24	2,710	7,400	64	15.2	3	7.6	80	3			102	0.139	745	45.2	111	18.5
50	July 24	22:31	1,690	3,450	74		5	7.4	105	3							120	20.3
51	Aug. 25	25:133	1,550	1,720	60		4	7.5	130	3							128	20.6

TABLE II – (Continued)

Chemical Analyses of Surface Waters in the Hudson Bay Drainage Basin

(In parts per million)

Magnesium (Mg)	Iron (Fe) Total	Iron (Fe) Dissolved	Manganese (Mn)	Aluminum (Al)	Copper (Cu)	Zinc (Zn)	Alkalis Sodium (Na)	Alkalis Potassium (K)	Ammonia (NH_3)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulphate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Silica (colorimetric) (SiO_2)	Phosphate (PO_4)	Boron (B)	Hardness as $CaCO_3$ Non-carbonate	Hardness as $CaCO_3$ Total	Sum of constituents	Per cent sodium	Saturation index	Stability index	No.
at SANDY FALLS near TIMMINS, ONTARIO (concluded)																									
2.7	0.29	0.08	0.0	0.0	0.0	0.0	0.9	0.5	0.1	0.0	35.1	7.0	1.1	0.0	0.6	3.2	0.02	.....	9.5	38.3	44.3	4.8	−1.8	11	1
3.2	.....	.....	.....	.....	.....	.....	1.5	0.7	0.4	0.0	42.4	6.9	1.8	.....	2.0	3.5	0.09	0.00	9.6	44.4	53.1	6.7	−1.0	9.7	2
2.9	.....	.....	.....	.....	.....	.....	1.5	0.7	0.3	0.0	43.6	7.3	1.7	.....	1.5	3.9	.....	.....	7.8	43.6	53.7	6.8	−1.3	10	3
at SMOOTH ROCK FALLS, ONTARIO – Drainage area 3,860 square miles																									
5.5	.....	0.02	0.0	0.0	0.0	0.05	0.9	0.4	0.0	0.0	101	4.8	1.2	0.0	0.3	3.3	.....	.....	3.5	86.0 (89.6)	91.4	2.2	−0.4	8.5	4
3.3	.....	0.07	0.0	0.0	0.0	0.0	1.0	0.4	0.15	0.0	53.9	6.3	0.8	0.0	0.3	3.9	.....	.....	8.8	53.0	58.4	3.9	−1.3	9.9	5
4.1	.....	.....	.....	.....	.....	.....	1.1	0.4	.....	0.0	63.1	7.2	0.8	.....	0.3	4.1	.....	.....	8.2	60.0	66.4	3.8	−1.1	9.6	6
																									7
4.0	.....	0.11	0.0	0.0	0.0	0.05	1.2	0.1	.....	0.0	52.3	6.3	0.7	0.0	0.5	4.4	.....	0.00	12.2	55.1	58.5	4.5	−1.2	9.8	8
3.7	.....	.....	.....	.....	.....	.....	0.9	0.5	0.2	0.0	43.4	6.4	1.0	.....	0.8	3.7	.....	.....	15.0	50.6	52.6	3.7	−1.1	9.0	9
4.4	.....	.....	.....	.....	.....	.....	1.1	0.4	0.0	0.0	60.2	7.5	0.6	.....	0.6	4.4	.....	.....	12.1	61.5	66.0	3.1	−0.8	9.3	10
4.4	.....	0.07	0.0	0.0	0.0	0.0	1.1	0.3	0.1	0.0	57.8	8.5	1.3	0.0	0.2	6.1	0.04	.....	12.6	60.0	67.2	3.8	−1.0	9.6	11
4.0	.....	.....	.....	.....	.....	.....	1.2	0.5	0.05	0.0	58.4	9.2	1.0	.....	0.8	5.1	0.00	.....	11.7	59.6	67.8	4.2	−0.8	9.2	12
																									13
2.8	.....	.....	.....	.....	.....	.....	1.0	0.5	0.2	0.0	50.5	5.4	1.0	.....	0.6	4.3	.....	0.00	9.5	50.9	56.2	4.0	−1.0	9.6	14
																									15
4.0	0.11	0.01	0.0	0.0	Trace	0.0	1.0	0.7	0.1	0.0	57.9	8.9	1.2	0.0	0.2	2.8	0.00	.....	10.1	57.6	63.8	3.6	−1.1	9.5	16
3.9	0.15	0.04	0.0	0.0	0.07	0.0	0.9	0.6	0.3	0.0	56.7	7.6	6.9	0.0	0.2	2.9	.....	.....	12.2	58.7 (60)	68.1	3.2	−1.4	9.9	17
at SMOKY FALLS, ONTARIO – Drainage area 13,400 square miles																									
4.2	.....	0.08	0.0	0.0	0.0	0.0	1.0	0.4	.....	0.0	62.9	8.0	1.9	0.0	0.2	3.0	.....	.....	11.6	63.2	68.1	3.3	−0.9	9.3	18
3.7	.....	.....	.....	.....	.....	.....	0.9	0.3	0.5	0.0	61.8	7.1	1.5	.....	0.2	2.6	.....	.....	10.9	61.6	65.3	3.1	−1.2	9.6	19
4.3	.....	.....	.....	.....	.....	.....	0.9	0.5	0.4	0.0	67.7	6.6	1.6	.....	0.4	3.5	.....	.....	12.8	68.3	71.4	2.8	−0.5	8.8	20
4.4	.....	0.10	0.0	0.0	0.0	0.05	1.0	0.5	0.0	0.0	60.2	4.8	1.2	0.0	0.3	3.8	0.03	.....	14.4	63.8	64.1	3.3	−1.5	10	21
5.0	.....	.....	.....	.....	.....	.....	0.9	0.3	.....	0.0	61.4	9.3	2.4	.....	0.1	3.4	.....	0.00	18.6	69.0	71.0	2.7	−1.2	9.7	22
4.6	.....	.....	.....	.....	.....	.....	1.1	0.4	.....	0.0	59.0	6.9	1.7	.....	0.3	4.3	.....	.....	16.2	64.6	66.6	3.5	−1.1	9.6	23
4.0	.....	0.11	0.0	0.0	0.0	0.0	1.0	0.3	0.1	0.0	52.9	5.0	1.6	0.0	0.2	4.4	Trace	.....	14.5	57.9	59.3	3.6	−1.0	9.6	24
5.5	.....	.....	.....	.....	.....	.....	1.1	0.5	0.1	0.0	71.8	8.9	1.1	.....	0.3	4.6	.....	.....	17.6	76.5	78.9	3.0	−1.1	9.2	25
5.6	.....	.....	.....	.....	.....	.....	1.2	0.4	0.2	0.0	72.0	10.9	1.8	.....	0.2	4.7	.....	.....	18.8	77.9	82.3	3.2	−1.1	9.4	26
5.4	.....	0.08	0.0	0.0	0.0	0.0	1.2	0.5	0.5	0.0	74.6	11.9	1.6	0.0	Trace	4.7	0.07	.....	17.1	78.3	84.6	3.2	−0.8	9.0	27
5.6	.....	.....	.....	.....	.....	.....	1.1	0.5	0.1	0.0	73.0	13.9	1.5	.....	0.2	5.0	0.07	.....	19.0	78.9	86.1	2.9	−1.2	9.5	28
5.3	.....	.....	.....	.....	.....	.....	1.3	0.7	0.3	0.0	78.4	13.5	1.2	.....	0.2	5.3	0.00	.....	15.6	79.9	89.4	3.4	−1.1	9.3	29
3.0	0.52	0.08	0.0	0.0	Trace	0.0	0.6	0.6	0.2	0.0	41.4	5.7	1.0	0.0	0.6	2.4	0.05	0.00	9.0	43.0	46.7	2.9	−1.9	11	30
3.7	.....	.....	.....	.....	.....	.....	0.9	0.6	0.6	0.0	51.9	6.8	1.8	.....	0.0	2.8	0.05	.....	10.8	53.4	57.6	3.5	−1.4	9.9	31
4.8	.....	.....	.....	.....	.....	.....	1.2	0.6	0.3	0.0	69.7	7.6	1.7	.....	0.2	3.0	.....	.....	12.2	69.4	73.3	3.6	−1.0	9.3	32
5.2	0.30	0.03	0.0	0.0	Trace	0.0	1.2	0.7	0.4	0.0	72.2	10.3	1.9	0.0	0.0	3.0	0.03	.....	17.3	76.5	80.0	3.3	−0.9	9.1	33
4.9	0.25	0.17	.....	.....	.....	.....	1.0	0.6	0.2	0.0	68.9	2.8	1.6	.....	0.0	4.2	.....	.....	14.6	71.1	69.6	2.9	−1.0	9.3	34
4.9	0.31	0.17	.....	.....	.....	.....	1.1	0.8	0.2	0.0	64.1	5.3	1.6	.....	0.1	4.3	.....	.....	17.7	70.3	69.9	3.3	−1.2	9.6	35
4.4	0.34	0.13	0.0	0.0	0.0	0.0	1.2	0.5	0.5	0.0	53.0	8.0	1.7	0.0	0.3	4.2	0.05	.....	16.5	60.0	63.3	4.1	−1.3	9.8	36
4.9	.....	.....	.....	.....	.....	.....	1.2	0.6	0.3	0.0	64.9	9.6	1.5	.....	0.2	4.8	.....	.....	15.9	69.1	74.6	3.6	−1.2	9.6	37
4.7	.....	.....	.....	.....	.....	.....	1.2	0.6	0.2	0.0	72.3	9.2	1.1	.....	0.2	5.4	.....	.....	12.2	71.5	78.9	3.5	−1.2	9.5	38
4.8	0.13	0.04	0.05	0.0	0.0	0.05	1.0	0.6	0.0	0.0	71.8	10.1	1.0	0.0	0.1	4.8	Trace	.....	13.2	72.1	79.0	2.9	−1.3	9.6	39
4.5	.....	.....	.....	.....	.....	.....	1.3	0.6	0.2	0.0	70.9	10.8	1.4	.....	0.1	5.7	.....	.....	13.9	72.1	80.5	3.8	−1.3	9.6	40
3.1	0.51	0.06	0.00	0.0	0.0	0.0	0.8	0.7	0.3	0.0	40.8	8.0	1.2	0.0	0.4	3.9	.....	.....	10.7	44.2	50.6	3.7	−1.6	10	41
																									42
3.2	.....	.....	.....	.....	.....	.....	0.8	0.6	0.3	0.0	46.2	5.6	1.6	.....	0.1	3.2	.....	.....	10.8	48.7	52.3	3.4	−1.6	10	43
3.8	.....	.....	.....	.....	.....	.....	0.8	0.5	0.2	0.0	57.8	7.6	1.4	.....	0.1	3.3	0.06	.....	10.8	58.2	63.5	2.8	−1.3	9.8	44
4.2	0.39	0.10	0.0	0.0	0.0	0.0	1.3	0.6	0.3	0.0	64.4	9.0	1.9	0.23	0.8	4.7	0.02	.....	10.7	63.5	73.0	4.2	−0.8	9.2	45
5.4	.....	.....	.....	.....	.....	.....	1.4	0.7	.....	0.0	78.0	10.2	1.5	.....	0.4	5.3	.....	.....	13.6	77.6	85.4	3.7	−0.8	9.1	46
5.1	.....	.....	.....	.....	.....	.....	1.2	0.6	0.1	0.0	67.9	13.5	1.6	.....	0.4	4.0	.....	.....	15.8	71.5	80.1	3.5	−1.4	9.8	47
4.8	0.21	0.09	0.0	0.0	0.0	0.0	1.1	0.6	0.2	0.0	59.2	7.2	2.0	0.27	0.2	4.4	0.01	.....	14.8	63.4	67.3	3.6	−1.0	9.5	48
at FAUQUIER, ONTARIO – Drainage area 4,610 square miles																									
3.7	.....	0.07	0.0	0.0	Trace	0.0	1.0	0.4	0.1	0.0	68.8	7.4	0.5	0.0	0.2	3.5	.....	.....	5.0	61.4	69.1	3.4	−0.7	9.0	49
4.3	.....	.....	.....	.....	.....	.....	0.8	0.4	0.1	0.0	74.5	5.9	1.3	.....	0.6	3.4	.....	.....	7 2	68.3	73.7	2.5	−0.9	9.2	50
4.6	.....	.....	.....	.....	.....	.....	1.1	0.4	0.1	0.0	72.9	6.1	1.5	.....	0.3	4.0	.....	.....	9.0	68.8	73.9	3.3	−0.8	9.1	51

TABLE II – (Continued)

Chemical Analyses of Surface Waters in the Hudson Bay Drainage Basin

(In parts per million)

No.	Date of collection	Time (Hours)	Stream discharge (Second-feet) On sampling date	Stream discharge (Second-feet) Monthly mean	Water temperature (°F.)	Oxygen consumed by $KMnO_4$	Carbon dioxide (calculated) (CO_2)	pH	Colour (Hazen Units)	Turbidity (Units)	Suspended matter Dried at 105°C.	Suspended matter Ignited at 550°C.	Residue on evaporation dried at 105°C. (Dissolved solids) P.P.M.	Residue on evaporation dried at 105°C. (Dissolved solids) Tons per acre-foot	Residue on evaporation dried at 105°C. (Dissolved solids) Tons per day	Loss on ignition from at 550°C.	Specific conductance micromhos at 25°C.	Calcium (Ca)
STATION NO. 80 – [illegible] RIVER*																		
1	Sept. 24/58	14:173	1,840	3,510	61	20.8	3	7.6	120	4	16.4	9.5	104	0.141	516	30.4	127	20.3
2	Oct. 24	10:101	4,120	4,990	48	.....	3	7.6	100	2	.....	.....	.....	.....	.....	.....	127	19.7
3	Nov. 26	12:71	5,240	5,710	31	.....	3	7.6	100	2	.....	.....	.....	.....	.....	.....	113	17.6
4	Dec. 27	12:123	1,970	2,630	35	14.4	2	7.8	80	5	11.3	2.4	126	0.171	669	48.0	145	22.1
5	Jan. 1/59	21:43	1,960	1,910	33	.....	2	7.7	75	0.9	.....	.....	.....	.....	.....	.....	142	21.3
6	Feb. 23	14:23	1,660	1,710	33	.....	4	7.5	45	2	.....	.....	.....	.....	.....	.....	133	21.0
7	Mar.	No sample taken																
8	Apr. 8	23:80	1,510	3,070	33	10.3	2	7.8	50	2	.....	.....	114	0.155	464	31.6	155	22.9
9	Apr. 24	19:34	3,760	3,070	33	.....	4	7.6	50	2	.....	.....	.....	.....	.....	.....	145	21.9
10	May 25	25:43	9,930	17,100	55	.....	5	7.2	90	5	.....	.....	.....	.....	.....	.....	95.0	14.3
STATION NO. 81 – KAPUSKASING RIVER*																		
11	Aug. 9/57	88:101	1,910	710	70	.....	4	7.5 (7.1)	70 (165)	3	.....	.....	.....	.....	.....	.....	137	20.7
12	Nov. 11	10:21	2,110	3,630	.....	21.2	2	7.8	110	4	8.2	4.4	134	0.182	763	64.0	134	21.5
13	Feb. 25/58	15:22	674	600	32	12.5	3	7.8	70	0.4	.....	.....	118	0.160	214	39.2	182	25.1
14	Mar.	No sample taken		600														
15	Apr.	No sample taken		4,380														
16	May 13	9:15	2,550	3,850	43	15.2	3	7.5	100	7	.....	.....	92.8	0.126	964	51.6	103	16.4
17	June 24	22:30	2,110	4,460	61.5	15.2	3	7.6	95	2	.....	.....	98.4	0.134	560	41.6	118	17.3
18	July	No sample taken		3,040														
19	Aug. 11	28:44	753	1,440	72	.....	4	7.5	90	.....	.....	.....	118	0.160	240	43.2	137	21.1
20	Aug. 26	23:195	3,070	1,440	61.5	16.1	4	7.4	100	5	10.2	6.6	125	0.170	1,035	64.0	145	22.3
21	Sept. 26	19:171	1,630	3,190	58	25.6	2	7.6	125	2	.....	.....	.....	.....	.....	.....	126	20.3
22	Oct. 28	7:156	.....	3,250	43	26.5	2	7.7	130	6	14.3	5.9	113	0.154	1,411	63.2	120	18.9
23	Nov. 25	13:127	3,540	3,940	32	21.9	2	7.8	120	2	.....	.....	104	0.141	993	52.8	107	17.0
24	Dec. 19	20:102	1,140	1,510	32	17.9	3	7.6	90	0.8	.....	.....	108	0.147	332	66.0	130	20.1
25	Jan. 23/59	6:109	644	702	32	13.6	2	7.9	80	0.8	.....	.....	118	0.160	205	40.0	155	23.1
26	Feb.	No sample taken		513														
27	Mar. 7	16:31	650	577	32	11.3	4	7.6	60	3	.....	.....	124	0.169	217	32.0	167	25.1
28	Apr.	No sample taken		2,060														
29	May 25	30:53	6,010	10,800	53	16.6	4	7.4	100	5	11.7	6.8	82.4	0.112	1,335	39.2	90.6	13.8
30	June 30	7:37	1,210	2,830	67	12.7	3	7.6	80	4	.....	.....	.....	.....	.....	.....	127	19.4
31	July 29	23:28	928	910	74	13.2	4	7.4	60	2	.....	.....	110	0.150	275	50.0	146	23.0
32	Aug. 13	22:28	65	1,020	68	14.3	7	7.3 (7.3)	65 (70)	1 (8)	.....	.....	119	0.162	20.9	38.8	160	24.3
STATION NO. 82 – NEBSKTASHI RIVER*																		
33	Aug. 8/58	20:187	.....	.....	70	6.2	0.9	8.0 (7.5)	25 (40)	0.8	.....	.....	77.6	.....	.....	19.2	89.9	12.5
STATION NO. 83 – LOST RIVER*																		
34	Aug. 13/59	22:28	.....	.....	64.5	34.8	6	7.2	240	10 (30)	13	20	143	0.194	.....	77.2	121.4	20.2
STATION NO. 84 – MISSINAIBI RIVER*																		
35	Aug. 8/57	89:106	680	803	70	12.0	3	7.7 (8.0)	60 (125)	1	.....	.....	123	0.167	226	42.8	152	22.9
36	June 25/58	16:23	3,140	7,280	60	16.0	2	7.8	80	2.5	.....	.....	101	0.137	855	38.4	128	20.0
37	July 25	25:39	2,230	4,810	72	.....	3	7.7	70	4	.....	.....	.....	.....	.....	.....	128	20.3
38	Aug.	No sample taken		2,010														
39	Sept. 25	13:172	1,960	5,240	59	19.1	2	8.0	90	1	.....	.....	127	0.173	671	53.3	148	24.2
40	Oct. 27	7:98	5,840	3,710	43	.....	2	7.8	120	2.5	.....	.....	.....	.....	.....	.....	138	21.7
41	Nov. 23	15:74	6,440	4,890	32	.....	3	7.7	90	0	.....	.....	.....	.....	.....	.....	125	20.2
42	Dec. 28	11:134	1,250	1,770	34	11.9	3	7.7	55	0.9	.....	.....	123	0.167	415	43.6	151	23.1

* Sampled from highway No. 11 bridge

* Sampled at plant intake

* Sampled one mile from Chapleau

* Sampled from highway No. 11 bridge

* Sampled from highway No. 11 bridge

TABLE II – (Continued)

Chemical Analyses of Surface Waters in the Hudson Bay Drainage Basin

(In parts per million)

Magnesium (Mg)	Iron (Fe) Total	Iron (Fe) Dissolved	Manganese (Mn)	Aluminum (Al)	Copper (Cu)	Zinc (Zn)	Alkalis Sodium (Na)	Alkalis Potassium (K)	Ammonia (NH_3)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulphate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Silica (colorimetric) (SiO_2)	Phosphate (PO_4)	Boron (B)	Hardness as $CaCO_3$ Non-carbonate	Hardness as $CaCO_3$ Total	Sum of constituents	Per cent sodium	Saturation index	Stability index	No.
at FAUQUIER, ONTARIO – Drainage area 4,610 square miles (concluded)																									
5.0	0.48	0.14	0.0	0.0	0.0	0.0	0.9	0.4	0.1	0.0	74.5	5.1	0.7	0.0	0.3	4.6	0.00	0.00	10.1	71.2	74.1	2.6	−0.7	9.0	1
4.6	.....	.....	.....	.....	.....	.....	1.2	0.5	0.1	0.0	70.0	4.3	1.4	.....	0.8	5.0	.....	.....	10.7	68.1	71.9	3.7	−0.8	9.2	2
4.4	.....	.....	.....	.....	.....	.....	0.9	0.5	0.1	0.0	60.7	6.5	0.8	.....	0.6	3.7	.....	.....	12.2	62.0	64.9	3.0	−0.9	9.4	3
5.0	1.0	0.18	0.0	0.0	0.0	0.3	1.3	0.6	0.05	0.0	78.9	7.1	1.1	0.0	1.0	6.2	0.03	.....	11.0	75.7	83.7	3.5	−0.5	8.8	4
4.9	.....	.....	.....	.....	.....	.....	1.6	0.5	0.2	0.0	75.5	6.2	2.0	.....	0.3	5.7	.....	.....	11.4	73.3	79.6	4.5	−0.6	8.9	5
5.3	.....	.....	.....	.....	.....	.....	1.2	0.6	0.1	0.0	75.0	6.5	0.9	.....	0.3	5.5	.....	.....	12.7	74.2	78.2	3.4	−0.8	9.1	6
																									7
4.9	.....	0.07	0.0	0.0	0.0	0.2	1.6	0.6	0.0	0.0	80.9	8.5	1.8	0.0	0.8	6.1	0.06	0.00	10.9	77.3	87.0	4.2	−0.4	8.6	8
5.0	.....	.....	.....	.....	.....	.....	1.0	0.8	0.1	0.0	79.8	6.8	0.4	.....	1.5	5.7	0.04	.....	9.7	75.2	82.4	2.8	−0.7	9.0	9
3.3	.....	.....	.....	.....	.....	.....	0.9	0.5	0.1	0.0	49.2	5.7	1.4	.....	0.6	3.4	0.04	.....	8.9	49.3	54.3	3.8	−1.4	10	10
at KAPUSKASING, ONTARIO – Drainage area 2,607 square miles																									
4.6	.....	.....	.....	.....	.....	.....	1.1	0.8	0.1	0.0	76.9	6.8	1.5	.....	0.3	4.3	.....	.....	7.5 (13.1)	70.6 (75.6)	78.1	3.2	−0.8	9.1	11
4.4	.....	0.15	0.0	0.0	0.0	0.0	1.1	0.6	0.0	0.0	79.2	6.3	2.1	0.0	0.1	4.5	.....	.....	6.7	71.7	79.6	3.2	−0.5	8.8	12
5.3	.....	0.08	0.0	0.0	0.0	0.0	1.4	0.9	0.05	0.0	94.4	7.6	1.3	0.0	0.6	6.5	.....	.....	7.0	84.4	95.3	3.4	−0.5	8.6	13
																									14
																									15
3.1	.....	0.07	0.0	0.0	.....	.....	1.1	0.4	.....	0.0	57.9	5.2	1.1	0.0	0.3	3.3	.....	.....	6.2	53.7	59.1	4.2	−1.1	9.7	16
4.4	.....	0.05	.....	.....	.....	.....	0.9	0.7	0.1	0.0	68.3	6.6	1.0	0.0	0.2	2.9	.....	.....	5.3	61.3	67.7	3.0	−0.7	9.0	17
																									18
4.9	.....	0.13	0.0	0.0	0.0	0.0	1.1	0.7	0.1	0.0	80.3	4.7	1.2	0.0	0.8	4.4	.....	.....	6.9	72.8	78.6	3.1	−0.8	9.1	19
5.2	0.26	0.12	0.0	0.0	0.0	0.0	1.3	0.7	0.1	0.0	85.2	3.5	0.6	0.0	0.4	5.1	0.04	.....	7.1	77.0	81.2	3.5	−0.8	9.0	20
4.9	.....	0.17	0.0	0.0	0.0	0.0	1.3	0.5	.....	0.0	71.3	5.3	1.0	0.0	0.3	5.7	Trace	0.1	12.3	70.8	74.5	3.8	−0.7	9.0	21
4.9	0.24	0.11	0.0	0.0	0.0	0.05	1.7	0.5	.....	0.0	66.3	4.2	1.3	0.0	0.2	6.3	.....	.....	12.9	67.3	70.7	5.1	−0.7	9.1	22
4.4	.....	0.16	0.0	0.0	0.0	0.1	1.2	0.4	0.2	0.0	58.3	4.8	1.5	0.0	0.2	4.3	0.01	.....	12.7	60.5	62.8	4.1	−0.8	9.4	23
4.8	.....	0.09	0.0	0.0	0.0	0.0	1.1	0.5	0.0	0.0	70.6	5.8	1.2	0.0	0.2	5.1	Trace	.....	12.0	69.9	73.6	3.3	−0.8	9.2	24
5.9	.....	0.06	0.0	0.0	0.0	0.0	1.3	0.9	0.1	0.0	87.5	7.3	1.0	0.0	0.8	5.8	0.18	.....	10.1	81.9	89.4	3.3	−0.3	8.5	25
																									26
6.6	.....	0.11	0.0	0.0	0.0	0.0	1.3	0.9	0.1	0.0	96.4	7.1	1.0	0.0	0.4	6.0	Trace	.....	10.7	89.8	96.0	3.0	−0.5	8.6	27
																									28
3.3	0.99	0.05	0.0	0.0	0.0	0.0	0.7	0.7	0.2	0.0	46.8	6.3	1.5	0.0	0.2	3.0	0.06	.....	9.6	48.0	52.7	3.0	−1.3	10	29
4.6	0.18	0.11	0.0	0.0	0.0	0.0	1.0	0.9	0.2	0.0	72.8	5.8	1.5	0.0	0.2	4.2	0.06	0.0	7.6	67.3	73.5	3.1	−0.8	9.2	30
5.3	0.12	0.02	0.0	0.0	0.0	0.0	1.2	1.1	0.4	0.0	86.8	7.1	1.1	0.0	0.0	4.2	0.00	.....	8.0	79.2	85.7	3.1	−0.7	8.8	31
5.4	0.12	0.04	0.0	0.0	Trace	0.1	1.1	1.1	0.2	0.0	93.4	5.5	0.2	0.0	3.0	3.4	.....	.....	6.2	82.8	90.1	2.8	−0.8	8.9	32
near CHAPLEAU, ONTARIO																									
2.8	.....	Trace	0.0	0.03	0.0	0.1	1.1	0.7	0.05	0.0	44.6	4.0	0.5	0.0	1.5	1.0	.....	.....	6.1	42.7 (43.9)	46.2	5.2	−0.7	9.4	33
near LEPAGE, ONTARIO																									
4.4	0.83	0.27	0.0	0.0	0.0	0.0	1.5	0.7	0.4	0.0	63.0	2.9	2.1	0.0	0.2	4.4	.....	.....	16.8	68.5	67.7	4.5	−1.2	9.6	34
at MATTICE, ONTARIO – Drainage area 3,450 square miles																									
5.6	.....	0.04	0.0	0.0	Trace	0.05	1.3	0.5	0.0	0.0	92.9	5.4	1.1	0.0	0.2	4.0	.....	.....	4.0	80.2 (82)	86.8	3.4	−0.5	8.7	35
4.4	.....	0.06	0.0	0.0	0.0	0.0	0.9	0.5	0.1	0.0	76.3	5.3	0.4	0.0	0.2	3.0	.....	.....	5.4	68.0	72.3	2.8	−0.5	8.8	36
4.3	.....	.....	.....	.....	.....	.....	0.7	0.4	0.3	0.0	77.8	5.3	1.0	.....	0.2	4.0	.....	.....	4.5	68.3	74.5	2.2	−0.6	8.9	37
																									38
5.9	.....	0.08	0.0	0.0	0.0	0.0	1.0	0.4	0.1	0.0	91.5	4.7	0.8	0.0	0.2	5.3	.....	0.05	9.5	84.6	87.6	2.5	−0.1	8.2	39
5.5	.....	.....	.....	.....	.....	.....	1.0	0.4	0.1	0.0	80.1	3.4	1.2	.....	0.5	5.0	.....	.....	11.1	76.8	78.1	2.7	−0.5	8.8	40
5.1	.....	.....	.....	.....	.....	.....	0.9	0.4	0.1	0.0	72.5	4.7	0.8	.....	0.4	4.6	.....	.....	11.9	71.4	72.8	2.6	−0.7	9.1	41
5.7	.....	0.03	0.0	0.04	0.0	0.0	1.1	0.5	0.05	0.0	84.8	8.2	1.1	0.0	1.5	6.5	0.00	.....	11.5	81.1	89.5	2.8	−0.6	8.9	42

TABLE II – (Continued)

Chemical Analyses of Surface Waters in the Hudson Bay Drainage Basin

(In parts per million)

No.	Date of collection	Storage (acre-feet)	Stream discharge (Second-feet): At sampling date	Stream discharge (Second-feet): Monthly mean	Water temperature (°F.)	Oxygen consumed by KMnO4	Carbon dioxide (calculated) (CO_2)	pH	Colour (Hazen) (Units)	Colour	Turbidity (Units)	Suspended matter: Dissolved at 180°C.	Suspended matter: Loss on ignition	Residue on evaporation dried at 180°C. (Dissolved solids): P.P.M.	Residue on evaporation dried at 180°C. (Dissolved solids): Tons per acre foot	Residue on evaporation dried at 180°C. (Dissolved solids): Tons per day	Hardness as CaCO3: at 550°C.	Hardness as CaCO3: at 25°C.	Alkalinity (as CaCO3)
7	Aug. 13/59	22:41	.....	.....	59	8.2	2	8.4 (7.7) 8.0 (7.7)	20 (40)	0.8 (1)			114	0.155					

* Analyses by Ontario Water Resources Commission

No.	Date of collection	Storage (acre-feet)	Stream discharge (Second-feet): At sampling date	Stream discharge (Second-feet): Monthly mean	Water temperature (°F.)	Oxygen consumed by KMnO4	Carbon dioxide (calculated) (CO_2)	pH	Colour (Hazen) (Units)	Colour	Turbidity (Units)	Suspended matter: Dissolved at 180°C.	Suspended matter: Loss on ignition	Residue on evaporation dried at 180°C. (Dissolved solids): P.P.M.	Residue on evaporation dried at 180°C. (Dissolved solids): Tons per acre foot	Residue on evaporation dried at 180°C. (Dissolved solids): Tons per day	Hardness as CaCO3: at 550°C.	Hardness as CaCO3: at 25°C.	Alkalinity (as CaCO3)

* Sampled at plant intake

† Working along river above sampling point; sample taken from highway No. 11 bridge

No.	Date of collection	Storage (acre-feet)	Stream discharge (Second-feet): At sampling date	Stream discharge (Second-feet): Monthly mean	Water temperature (°F.)	Oxygen consumed by KMnO4	Carbon dioxide (calculated) (CO_2)	pH	Colour (Hazen) (Units)	Colour	Turbidity (Units)	Suspended matter: Dissolved at 180°C.	Suspended matter: Loss on ignition	Residue on evaporation dried at 180°C. (Dissolved solids): P.P.M.	Residue on evaporation dried at 180°C. (Dissolved solids): Tons per acre foot	Residue on evaporation dried at 180°C. (Dissolved solids): Tons per day	Hardness as CaCO3: at 550°C.	Hardness as CaCO3: at 25°C.	Alkalinity (as CaCO3)
20	Aug. 13/59	22:28	87	.....	67	36.8	4	7.4 (7.1)	275 (200)	4 (5)	10.0	7.7	136	0.185	.....	75	105	18.3

* Sampled from highway No. 11 bridge

No.	Date of collection	Storage (acre-feet)	Stream discharge (Second-feet): At sampling date	Stream discharge (Second-feet): Monthly mean	Water temperature (°F.)	Oxygen consumed by KMnO4	Carbon dioxide (calculated) (CO_2)	pH	Colour (Hazen) (Units)	Colour	Turbidity (Units)	Suspended matter: Dissolved at 180°C.	Suspended matter: Loss on ignition	Residue on evaporation dried at 180°C. (Dissolved solids): P.P.M.	Residue on evaporation dried at 180°C. (Dissolved solids): Tons per acre foot	Residue on evaporation dried at 180°C. (Dissolved solids): Tons per day	Hardness as CaCO3: at 550°C.	Hardness as CaCO3: at 25°C.	Alkalinity (as CaCO3)
21	July 11/60	49:148	.....	.....	70	.....	4	6.9	80	0.8	.....	.....	.....	.....	.....	.....	.....	46.5	4.3

No.	Date of collection	Storage (acre-feet)	Stream discharge (Second-feet): At sampling date	Stream discharge (Second-feet): Monthly mean	Water temperature (°F.)	Oxygen consumed by KMnO4	Carbon dioxide (calculated) (CO_2)	pH	Colour (Hazen) (Units)	Colour	Turbidity (Units)	Suspended matter: Dissolved at 180°C.	Suspended matter: Loss on ignition	Residue on evaporation dried at 180°C. (Dissolved solids): P.P.M.	Residue on evaporation dried at 180°C. (Dissolved solids): Tons per acre foot	Residue on evaporation dried at 180°C. (Dissolved solids): Tons per day	Hardness as CaCO3: at 550°C.	Hardness as CaCO3: at 25°C.	Alkalinity (as CaCO3)
22	Dec. 15/60	42:141	.....	.....	70	.....	5	7.0	80	0	.....	.....	.....	.....	.....	.....	.....	54.5	7.9

No.	Date of collection	Storage (acre-feet)	Stream discharge (Second-feet): At sampling date	Stream discharge (Second-feet): Monthly mean	Water temperature (°F.)	Oxygen consumed by KMnO4	Carbon dioxide (calculated) (CO_2)	pH	Colour (Hazen) (Units)	Colour	Turbidity (Units)	Suspended matter: Dissolved at 180°C.	Suspended matter: Loss on ignition	Residue on evaporation dried at 180°C. (Dissolved solids): P.P.M.	Residue on evaporation dried at 180°C. (Dissolved solids): Tons per acre foot	Residue on evaporation dried at 180°C. (Dissolved solids): Tons per day	Hardness as CaCO3: at 550°C.	Hardness as CaCO3: at 25°C.	Alkalinity (as CaCO3)
23	[illegible]	[illegible]	.....	.....	[illegible]	8.0	2	[illegible]	25	.....	.....	.....	.....	.....	.....	.....	.....	36.3	.....

No.	Date of collection	Storage (acre-feet)	Stream discharge (Second-feet): At sampling date	Stream discharge (Second-feet): Monthly mean	Water temperature (°F.)	Oxygen consumed by KMnO4	Carbon dioxide (calculated) (CO_2)	pH	Colour (Hazen) (Units)	Colour	Turbidity (Units)	Suspended matter: Dissolved at 180°C.	Suspended matter: Loss on ignition	Residue on evaporation dried at 180°C. (Dissolved solids): P.P.M.	Residue on evaporation dried at 180°C. (Dissolved solids): Tons per acre foot	Residue on evaporation dried at 180°C. (Dissolved solids): Tons per day	Hardness as CaCO3: at 550°C.	Hardness as CaCO3: at 25°C.	Alkalinity (as CaCO3)
24	Aug. 13/59	26:41	495	413	64.5	14.1	2	7.8 (8.1)	60 (75)	0.8 (1)	.....	.....	118	0.160	158	41.6	154	24.1
25	Sept. 24	7:37	366	381	.....	12.8	2	7.9	40	0.8	.....	.....	116	0.158	114	29.6	163	26.8
26	Oct. 20	11:26	824	655	.....	.....	3	7.7	45	0	.....	.....	.....	.....	.....	.....	146	24.2
27	Nov. 28	9:114	648	749	.....	.....	3	7.9	35	0.4	.....	.....	.....	.....	.....	.....	174	29.4
28	Dec. 28	26:66	424	488	.....	.....	4	7.7	30	0	.....	.....	.....	.....	.....	.....	190	30.0
29	Jan. 28/60	22:109	284	331	.....	.....	3	7.8	25	0	.....	.....	.....	.....	.....	.....	189	30.0
30	Feb. 25	14:77	200	229	.....	.....	3	7.8	25	0	.....	.....	.....	.....	.....	.....	198	31.1

* Sampled from highway No. 11 bridge

TABLE II – (Continued)

Chemical Analyses of Surface Waters in the Hudson Bay Drainage Basin

(In parts per million)

Magnesium (Mg)	Iron (Fe) Total	Iron (Fe) Dissolved	Manganese (Mn)	Aluminum (Al)	Copper (Cu)	Zinc (Zn)	Alkalis Sodium (Na)	Alkalis Potassium (K)	Ammonia (NH_3)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulphate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Silica (colorimetric) (SiO_2)	Phosphate (PO_4)	Boron (B)	Hardness as $CaCO_3$ Non-carbonate	Hardness as $CaCO_3$ Total	Sum of constituents	Per cent sodium	Saturation index	Stability index	No.
at MATTICE, ONTARIO – Drainage area 3,450 square miles (concluded)																									
5.9	.....	.....	.....	.....	.....	.....	1.1	0.7	0.3	0.0	86.7	4.4	1.3	.....	0.5	4.6	.....	.....	9.8	80.9	83.9	2.8	−0.5	8.7	1
6.1	.....	.....	.....	.....	.....	.....	0.9	0.6	0.2	0.0	93.5	5.6	1.0	.....	0.4	5.8	.....	.....	11.5	88.2	91.7	2.2	−0.4	8.6	2
5.7	.....	0.07	0.0	0.0	0.0	0.0	1.1	0.7	0.1	0.0	92.0	7.0	0.9	0.0	1.0	7.5	0.15	.....	10.3	85.8	94.4	2.7	−0.2	8.3	3
4.0	.....	.....	.....	.....	.....	.....	1.8	0.8	0.15	0.0	53.6	4.4	0.9	.....	1.5	3.8	.....	0.00	9.0	53.1	58.3	6.7	−0.9	9.4	4
4.1	.....	.....	.....	.....	.....	.....	0.8	0.5	0.2	0.0	56.3	4.2	1.6	.....	0.4	3.1	0.03	.....	9.8	56.0	58.2	3.0	−0.9	9.4	5
near HEARST, ONTARIO																									
.....	.....	0.00	.....	.....	.....	.....	.....	.....	.....	0.0	102	3.6	0.0	.....	.....	.....	.....	.....	14	98	.....	.....	.....	.....	6
5.9	0.07	0.02	0.0	0.03	Trace	0.0	1.4	1.1	0.1	0.0	102	3.9	0.9	0.0	0.8	4.3	.....	.....	2.7	86.1	93.3	3.4	−0.1	8.2	7
near HEARST, ONTARIO																									
3.9	1.3	0.11	0.0	0.0	0.0	0.0	0.7	0.5	.....	0.0	56.8	4.9	1.7	0.0	0.4	2.1	.....	.....	7.9	54.5	57.7	2.7	−1.2	9.7	8
3.9	.....	.....	.....	.....	.....	.....	0.7	0.4	0.3	0.0	61.3	3.5	2.0	.....	0.5	2.7	.....	.....	10.4	60.7	61.8	2.4	−0.8	9.2	9
4.4	.....	.....	.....	.....	.....	.....	1.1	0.7	.....	0.0	75.7	3.0	1.8	.....	0.2	4.0	.....	.....	9.4	71.5	73.9	3.2	−0.8	9.1	10
																									11
4.5	.....	0.13	0.0	0.0	0.0	0.0	1.0	0.5	.....	0.0	58.9	3.1	1.9	0.0	0.2	3.9	0.00	0.00	13.4	61.7	61.5	3.4	−1.1	9.6	12
3.6	.....	.....	.....	.....	.....	.....	0.7	0.4	0.2	0.0	40.5	3.2	1.2	.....	0.6	3.7	.....	.....	13.8	47.0	46.2	3.1	−1.3	10	13
5.7	.....	.....	.....	.....	.....	.....	0.9	0.2	.....	0.0	80.7	3.4	1.2	.....	0.7	4.2	.....	.....	10.9	77.1	77.5	2.5	−0.8	9.1	14
6.7	5.0	0.12	0.0	0.0	0.0	0.0	5.2	1.1	0.2	0.0	107	1.8	7.4	0.0	6.0	6.3	0.03	.....	15.4	103	118	9.7	−0.2	8.2	15
7.7	.....	.....	.....	.....	.....	.....	1.3	0.7	0.2	0.0	114	4.4	1.4	.....	0.5	5.5	.....	.....	13.0	107	108	2.6	−0.5	8.5	16
2.2	.....	.....	.....	.....	.....	.....	0.5	0.3	0.5	0.0	25.1	5.1	1.6	.....	2.0	0.9	0.00	.....	9.2	29.8	33.1	3.5	−2.0	11	17
3.2	0.58	0.07	0.0	0.0	0.0	0.0	0.8	0.8	0.1	0.0	49.5	1.4	1.1	0.0	2.0	4.2	0.03	.....	5.2	45.8	51.1	3.6	−1.4	10	18
3.0	.....	.....	.....	.....	.....	.....	0.9	0.4	0.1	0.0	39.7	2.9	1.8	.....	0.4	1.4	0.04	0.00	8.2	40.8	41.8	4.5	−1.8	11	19
at OPASATIKA, ONTARIO																									
4.3	0.59	0.25	0.0	0.0	0.0	0.0	1.2	0.5	.....	0.0	59.1	2.3	1.7	0.0	0.2	3.8	.....	.....	14.8	63.3	61.7	3.9	−1.0	9.4	20
at 51°25' N – 91°52' W – ONTARIO																									
1.4	0.21	0.0	0.0	0.0	0.0	0.0	0.8	0.5	.....	1.0	22.8	3.2	1.0	0.0	0.2	2.8	.....	.....	2.9	21.6	27.4	7.2	−2.4	12	21
at 51°19' N – 91°37' W – ONTARIO																									
1.7	0.11	0.0	0.0	0.0	0.0	0.0	0.7	0.5	.....	0.0	28.0	3.6	1.3	0.0	0.1	1.8	.....	0.00	3.6	26.6	31.4	5.3	−2.1	11	22
at 51°33' N – 88°38' W – ONTARIO																									
.....	.....	0.02	0.0	.....	.....	.....	1.5	0.5	.....	0.0	61.8	2.4	0.7	0.11	0.7	4.8	.....	.....	2.4	52.1	.....	5.8	.....	.....	23
forty miles west of HEARST, ONTARIO – Drainage area, 930 square miles																									
5.2	0.12	0.04	0.0	0.0	Trace	0.0	1.0	0.5	0.1	0.0 (0)	90.9 (95.5)	5.6	0.9	0.0	0.1	7.1	.....	.....	6.9	81.5 (80)	89.3	2.6	−0.3	8.4	24
5.5	0.07	0.01	0.0	0.0	0.0	0.0	0.6	0.4	0.2	0.0	102	5.2	0.8	0.0	0.0	5.0	.....	.....	6.0	89.5	94.4	1.4	−0.2	8.3	25
4.9	0.10	.....	.....	.....	0.0	0.0	0.6	0.3	0.1	0.0	87.2	4.4	1.1	.....	0.4	4.0	.....	.....	9.0	80.5	82.8	1.6	−0.5	8.7	26
5.6	.....	.....	.....	.....	.....	.....	0.9	0.6	0.1	0.0	111	3.6	0.9	.....	0.6	6.0	.....	.....	5.7	96.4	102	2.0	−0.1	8.1	27
6.6	0.49	0.00	0.0	0.0	0.0	0.0	0.8	0.6	0.3	0.0	116	4.5	0.8	0.0	0.3	5.5	0.04	.....	7.0	102	106	1.7	−0.2	8.1	28
6.5	.....	.....	.....	.....	.....	.....	0.8	0.6	0.0	0.0	117	3.5	0.7	.....	0.3	5.8	.....	.....	5.9	101	105	1.7	−0.2	8.2	29
6.7	.....	.....	.....	.....	.....	.....	0.6	0.6	0.2	0.0	116	3.5	0.5	.....	0.2	4.2	.....	.....	9.3	105	105	1.2	−0.1	8.0	30

TABLE II – (Continued)

Chemical Analyses of Surface Waters in the Hudson Bay Drainage Basin

(In parts per million)

No.	Date of collection	Storage period (Days)	Stream discharge (Second-feet) Spot sampling date	Stream discharge (Second-feet) Monthly mean	Water temperature (°F.)	Oxygen consumed by $KMnO_4$	Carbon dioxide (calculated) (CO_2)	pH	Colour (Hazen) (Units)	Turbidity (Units)	Suspended matter Dried at 105°C.	Suspended matter Ignited at 550°C.	Residue on evaporation dried at 180°C. (Dissolved solids) P.P.M.	Residue on evaporation dried at 180°C. (Dissolved solids) Tons per acre-foot	Residue on evaporation dried at 180°C. (Dissolved solids) Tons per day	Loss on ignition (dissolved solids) at 550°C.	Specific conductance at 25°C.	Hardness as CaCO₃
STATION NO. 92 – NAGAMAMI RIVER*																		
1	Mar. 18/59	11:49	128	432				7.9	30	0								118
2	Apr. 28	20:32	1,630	520			4	7.4	45	1								192
3	May	No sample taken		1,520														
4	June 10	4:27	2,570	2,110			2	7.9	80	1								154
5	July 3	9:13	865	682			2	8.2	45	0.8								193
6	Aug. 3	9:125	381	522			2	8.0	45	1								206
STATION NO. 92 – SKUNK RIVER*																		
7	Aug. 13/59	26:41	.....	.....	65	8.1	2	8.2 (8.0)	35 (50)	0.8 (2)	.....	.....	192	.....	.....	45.6	39.7	45.4
STATION NO. 93 – SKEKAK RIVER*																		
8	Aug. 13/59	26:41	394	394	65	12.9	2	8.0 (8.0)	50 (90)	0.7 (4)	.....	.....	158	0.215	168	44.4	24	46.6
9	Sept. 24	7:32	1,670	334	.....	11.2	3	8.2	30	2	.....	.....	164	0.223	739	35.2	248	39.9
10	Oct. 29	11:26	1,520	1,150	.....	.....	3	7.8	60	0.8	.....	.....	.....	.....	.....	.....	290	41.8
11	Nov. 26	8:114	1,010	1,200	.....	.....	5	7.7	40	0.8	.....	.....	.....	.....	.....	.....	238	37.0
12	Dec.	No sample taken		755	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
13	Jan. 28/60	22:109	452	494	.....	.....	4	7.8	20	3	.....	.....	.....	.....	.....	.....	780	44.8
14	Feb.	No sample taken		394	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
15	Mar. 28	15:49	275	309	.....	.....	3	8.0	15	2	.....	.....	.....	.....	.....	.....	288	45.0
16	Apr.	No sample taken		1,220	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
17	June 10	4:27	2,280	1,960	.....	.....	2	7.9	80	3	.....	.....	.....	.....	.....	.....	171	27.0
18	July	No sample taken		566	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
19	Aug. 3	30:125	350	645	.....	.....	1	8.2	35	1.5	.....	.....	.....	.....	.....	.....	220	36.7
STATION NO. 94 – KABINAKAGAMI RIVER*																		
20	Aug. 7/57	90:107	875	781	69	9.7	3	7.7	35 (70)	0.4	.....	.....	120	0.163	253	35.2	150	22.2
21	June 27/58	19:52	5,490	3,490	46	22.0	2	7.8	110	6	16	11	127	0.173	1,880	54.4	147	20.7
22	July 25	25:37	2,000	3,110	71	.....	5	7.5	50	0.9	.....	.....	102	0.139	550	35.6	145	22.2
23	Aug. 27	23:131	1,860	1,390	60	.....	4	7.5	70	0.9	.....	.....	.....	.....	.....	.....	155	23.6
24	Sept. 26	12:171	1,520	2,160	.....	11.4	2	7.9	45	0.8	.....	.....	104	0.141	429	23.6	152	23.0
25	Oct. 27	8:107	1,650	1,550	43	.....	2	7.8	70	0	.....	.....	.....	.....	.....	.....	140	23.2
26	Nov. 28	10:59	2,170	2,270	33	.....	2	8.0	55	18	.....	.....	.....	.....	.....	.....	161	25.4
27	Dec. 27	12:123	1,140	1,410	35	11.3	2	7.8	40	12	8.6	0.4	165	0.224	1,009	43.6	230	21.5
28	Jan. 26/59	10:44	640	773	32	.....	1	8.1	45	4	.....	.....	.....	.....	.....	.....	243	30.8
29	Feb.	No sample taken		614	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
30	Mar. 5	8:33	604	607	33	.....	2	8.1	35	0.7	.....	.....	.....	.....	.....	.....	189	28.1
31	Mar. 26	14:60	609	607	35	11.2	2	8.0	40	1	.....	.....	139	0.189	228	40.8	201	28.6
32	Apr. 27	16:31	1,240	816	36	.....	3	7.7	50	2	.....	.....	107	0.146	1,140	28.4	147	22.2
33	May 27	33:41	3,950	4,770	60	.....	5	7.4	45	2	.....	.....	.....	.....	.....	.....	139	20.9
STATION NO. 95 – CAREY LAKE*																		
34	Aug. 13/59	22:41	.....	.....	66	12.9	2	8.0 (7.9)	45 (70)	2 (5)	.....	.....	154	0.209	.....	51.6	213	34.3
STATION NO. 96 – OTASAWIAN RIVER*																		
35	Aug. 16/59	33:66	.....	.....	61	19.3	3	7.6 (6.9)	70 (150)	0.8 (2)	.....	.....	.....	.....	.....	.....	135	22.4

* Sampled from highway No. 11 bridge

* Sampled from highway No. 11 bridge

* Sampled at gauge at highway No. 11 bridge, Lat. 49°45' 20" Long. 84°24' 24"

* Sampled from highway No. 11 bridge

* Sampled from Ontario Dept. of Lands and Forests Air Station wharf

* Sampled from highway No. 11 bridge

TABLE II – (Continued)

Chemical Analyses of Surface Waters in the Hudson Bay Drainage Basin

(In parts per million)

Magnesium (Mg)	Iron (Fe) Total	Iron (Fe) Dissolved	Manganese (Mn)	Aluminum (Al)	Copper (Cu)	Zinc (Zn)	Alkalis Sodium (Na)	Alkalis Potassium (K)	Ammonia (NH_3)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulphate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Silica (colorimetric) (SiO_2)	Phosphate (PO_4)	Boron (B)	Hardness as $CaCO_3$ Non-carbonate	Hardness as $CaCO_3$ Total	Sum of constituents	Per cent sodium	Saturation index	Stability index	No.
forty miles west of HEARST, ONTARIO – Drainage area,930 square miles (concluded)																									
7.5	0.03	0.0	0.05	0.0	0.0	0.0	0.8	0.7	0.3	0.0	126	3.4	0.7	0.0	0.2	4.5	.....	....	5.8	109	112	1.5	0.0	7.9	1
4.1	.....	.....	.....	.....	.....	.....	0.8	0.4	0.2	0.0	71.9	4.0	1.9	.....	0.4	2.9	.....	....	7.3	66.3	69.4	2.6	−0.9	9.2	2
																									3
5.5	.....	.....	.....	.....	.....	.....	0.9	0.5	0.2	0.0	93.7	3.8	1.8	.....	0.2	4.6	.....	....	4.8	81.7	87.5	2.3	−0.3	8.5	4
5.6	0.08	0.0	0.0	0.0	0.0	0.0	0.7	0.5	.....	0.0	98.7	2.4	1.2	0.0	0.15	4.4	0.06	....	4.1	85.1	85.0	1.7	−0.1	8.1	5
5.4	.....	.....	.....	.....	.....	.....	1.0	0.6	0.1	0.0	100	5.0	0.7	.....	0.3	6.9	.....	....	2.8	85.1	94.4	2.5	−0.1	8.2	6
near HEARST, ONTARIO																									
12.1	0.18	0.02	0.0	0.01	Trace	0.0	1.4	1.3	0.0	0.0	188	3.1	0.5	0.0	0.8	10	.....	....	7.7	162	167	1.8	+0.7	6.8	7
thirty-two miles west of HEARST; ONTARIO – Drainage area 1,270 square miles																									
8.7	0.19	0.03	0.0	0.0	0.0	0.0	1.1	0.8	0.0	0.0 (0)	147 (152)	2.1	0.8	0.0	0.3	7.4	.....	....	6.7 (5)	127 (130)	130	1.8	+0.2	7.6	8
8.8	0.13	0.02	0.0	0.06	0.0	0.0	1.1	0.7	0.2	0.0	159	4.8	0.9	0.0	0.0	6.7	.....	....	5.2	136	141	1.7	+0.5	7.2	9
6.9	0.18	.....	.....	.....	0.0	0.0	0.9	0.4	0.1	0.0	117	5.0	1.3	.....	0.3	6.2	.....	....	9.6	106	110	1.8	−0.2	8.2	10
8.6	.....	.....	.....	.....	.....	.....	1.8	1.4	.....	0.0	148	3.9	2.2	.....	3.0	6.3	.....	....	6.6	128	137	2.9	−0.1	7.9	11
																									12
11.0	0.25	0.0	0.0	Trace	Trace	0.0	.....	1.0	0.0	0.0	172	9.9	.....	0.05	0.3	7.8	0.00	....	14.8	156	405	56	+0.1	7.6	13
																									14
10.3	0.10	0.0	0.02	0.01	0.0	0.0	1.1	0.9	0.3	0.0	182	4.0	0.9	0.0	0.3	6.5	0.00	....	4.4	154	159	1.5	+0.4	7.2	15
																									16
5.6	0.13	0.0	0.0	0.03	0.0	0.0	0.9	0.7	0.2	0.0	102	4.2	1.1	0.0	0.3	5.6	0.03	....	6.3	89.8	95.7	2.1	−0.1	8.1	17
																									18
7.7	0.09	0.0	0.0	0.0	0.0	0.0	1.2	1.0	0.1	0.0	150	5.9	0.8	0.0	0.5	6.7	0.0	....	0.3	124	134	2.1	+0.4	7.4	19
twenty miles west of HEARST, ONTARIO – Drainage area, 1,460 square miles																									
5.5	.....	0.02	0.0	0.0	0.0	0.0	0.9	0.5	0.0	0.0	89.8	5.7	1.0	0.0	0.4	3.5	.....	....	5.7	78.0 (80)	83.1	2.4	−0.5	8.7	20
5.3	1.3	0.05	0.0	0.0	0.0	0.0	0.8	0.4	0.2	0.0	80.7	4.1	1.6	0.0	0.7	4.2	.....	....	7.2	73.4	77.6	2.3	−0.4	8.6	21
5.2	.....	0.02	.....	0.0	.....	.....	0.7	0.5	0.25	0.0	88.5	3.5	0.9	0.0	0.5	3.9	.....	....	4.2	76.8	81.0	1.9	−0.7	8.9	22
5.9	.....	.....	.....	.....	.....	.....	0.8	0.6	0.1	0.0	93.5	5.7	0.6	.....	0.3	4.5	.....	0.00	6.4	83.1	88.0	2.0	−0.7	8.9	23
5.9	.....	0.03	0.0	0.0	0.0	0.0	0.8	0.5	0.1	0.0	87.9	4.7	0.6	0.0	0.3	4.5	.....	0.00	9.4	81.5	83.6	2.1	−0.3	8.5	24
5.7	.....	.....	.....	.....	.....	.....	0.7	0.3	0.05	0.0	89.2	4.9	1.0	.....	0.2	5.2	.....	....	8.1	81.3	85.1	1.8	−0.4	8.6	25
6.0	.....	.....	.....	.....	.....	.....	1.1	0.5	0.1	0.0	93.7	6.2	0.8	.....	0.6	4.6	.....	....	11.1	88.0	91.3	2.6	−0.2	8.4	26
5.7	0.87	0.16	0.0	0.0	0.0	0.1	11.5	1.1	0.3	0.0	77.0	6.4	18.4	0.0	4.0	5.1	0.00	....	13.9	77.1	112	24	−0.6	9.0	27
																									28
7.2	.....	.....	.....	.....	.....	.....	6.1	1.9	0.1	0.0	116	4.4	13.2	.....	0.3	4.5	.....	....	11.7	107	125	11	+0.1	7.9	29
7.4	.....	.....	.....	.....	.....	.....	1.3	0.5	0.2	0.0	110	4.2	2.1	.....	0.4	4.4	0.04	....	10.1	101	103	2.7	+0.1	7.9	30
7.5	.....	0.04	0.0	0.02	Trace	0.0	2.9	1.3	0.1	0.0	112	6.8	4.0	0.0	2.0	4.9	0.00	....	10.5	102	113	5.7	0.0	8.0	31
5.4	.....	.....	0.0	.....	0.0	0.0	0.8	0.7	0.1	0.0	86.2	3.3	0.8	.....	0.8	6.1	0.05	0.00	6.9	77.6	81.7	2.2	−0.6	8.9	32
5.4	.....	.....	.....	.....	.....	.....	0.9	0.4	0.2	0.0	81.2	2.3	1.5	.....	0.3	5.5	0.04	....	7.8	74.4	77.2	2.5	−0.8	9.0	33
near HEARST, ONTARIO																									
6.7	0.12	0.0	0.0	0.0	0.0	0.0	1.7	0.9	0.1	0.0	127	5.6	3.3	0.0	0.4	6.4	.....	....	9.3	113	122	3.1	+0.1	7.8	34
near HEARST, ONTARIO																									
4.5	0.09	0.05	0.0	0.0	Trace	0.3	1.1	0.6	0.1	0.0	79.6	1.7	1.3	0.0	1.2	4.3	.....	....	9.1	74.4	76.3	3.1	−0.6	8.8	35

TABLE II – (Continued)

Chemical Analyses of Surface Waters in the Hudson Bay Drainage Basin

(In parts per million)

No.	Date of collection	Stream discharge (cubic feet per second)			Oxygen consumed by $KMnO_4$	Carbon dioxide (calculated)	pH	Colour (Hazen Units)	Turbidity (Units)	Suspended matter		Residue on evaporation (dried at 180°C)			Total hardness as $CaCO_3$	Specific conductance at 25°C	Silica
		Gauge height (Feet)	By sampling rate	Maximum (Feb.-Mar.)	Taken on sampling date					Ignited at 250°C	Ignited at 550°C	P.P.M.	Tons per acre-foot	Tons per day			
					(°F.)												
	STATION NO. 7 – [illegible] RIVER*																
1	Aug. [illegible]	[illegible]			[illegible]	70		2	7.9 (7.8)	5 (85)	1							
2	[illegible]	No sample taken																
3	[illegible]	51:16				68	11.3	2	7.8	40	1			.146	0.197			
4	Nov. 14	9:15				32		3	7.2	35	0.4							
5	[illegible]	28:38				35	9.4	3	7.8	40	0.8			.143				
6	[illegible]	23:35				34		3	8.0	40	1							
7	[illegible]	22:39				33		3	7.8	40	2							
8	Mar. 27	52:19				34	11.2	3	7.8	45	0.9			.144				
9	Apr. 26	16:22				36		3	7.7	40	1							
10	May 25	14:23				42		3	7.8	55	0							
11	June 29	20:28				59	10.3	3	7.6	60	3	1.7	1.3	.138	1.87			
12	[illegible]	No sample taken																
13	Aug. 30	23:124				64		3	7.7	45	0.9							
14	Sept. 26	5:122				55		3	8.0	50	4							
15	Aug. 13/59	26:41				70	11.6	4	7.6 (7.9)	35 (75)	3 (2)			.124	0.169			
	STATION NO. 98 – REESOR LAKE																	
16	Aug. 14/59	26:40				63	7.3	5	7.0 (7.6)	25 (45)	1.5 (1)			.159	0.216			
	STATION NO. 99 – KENOGAMISIS LAKE*																	
17	Aug. 7/57	90:107				70	11.3	3	8.0 (8.6)	50 (75)	0.4			.115	0.156			
18	Aug. 13/59	27:41				74	11.2	3	7.7 (7.5)	30 (45)	2 (7)			.124	0.169			
	STATION NO. 100 – KENOGAMISIS LAKE*																	
19	Aug. 13/59	26:41				68	10.7	2	8.0 (8.1)	35 (60)	2 (2)			.127	0.173			
	STATION NO. 101 – PAGWACHUAN RIVER*																	
20	Aug. 7/57	90:107				69	9.6	2	8.0 (7.5)	40 (80)	3			.115	0.156			
21	Aug. 13/59	26:41				63	14.7	3	7.9 (8.0)	80 (90)	0.8 (2)			.138	0.205			
	STATION NO. 102 – PAGWACHUAN RIVER*																	
22	Jan. 10/57	21:28				29	23.0	2	8.3	70	4	2.8	0	264	1.359			
23	Nov. 1	12:21				37	10.4	2	8.2	40	0.4			.172	0.234			
24	June 8/58	5:17					18.4	3	8.0	100	0.8			.127	0.173			
25	July 27	24:45				70	12.1	3	7.9	85	0.9			.135	0.183			
26	Aug. 28	26:130				55		4	7.6	140	3							
27	Sept.	No sample taken																
28	Oct. 2	14:113	2'			46		2	7.9	100	0							
29	Nov.	No sample taken																
30	Dec.	No sample taken																

† Discharge records over Kenogami River dam at Lat. 49°34', Long. 86°50'.

* Sampled at wharf near Longlac railway station, Lat. 49°47'15", Long. 86°32' 30"

TABLE II – (Continued)

Chemical Analyses of Surface Waters in the Hudson Bay Drainage Basin

(In parts per million)

Magnesium (Mg)	Iron (Fe) Total	Iron (Fe) Dissolved	Manganese (Mn)	Aluminum (Al)	Copper (Cu)	Zinc (Zn)	Alkalis Sodium (Na)	Alkalis Potassium (K)	Ammonia (NH_3)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulphate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Silica (colorimetric) (SiO_2)	Phosphate (PO_4)	Boron (B)	Hardness as $CaCO_3$ Non-carbonate	Hardness as $CaCO_3$ Total	Sum of constituents	Per cent sodium	Saturation index	Stability index	No.
at LONGLAC, ONTARIO – Drainage area at dam 1,630 square miles																									
4.4	.....	.....	.....	.....	.....	.....	1.3	0.7	0.0	0.0	86.7	5.3	1.5	.....	0.7	3.1	.....	.....	5.9	77.0 (77.6)	83.3	3.5	−0.3	8.5	1
																									2
4.6	.....	Trace	0.0	0.0	0.0	0.0	0.8	0.7	0.05	0.0	92.6	2.9	1.2	0.4	0.1	3.4	.....	.....	4.8	80.8	84.6	2.1	−0.3	8.4	3
5.4	.....	.....	.....	.....	.....	.....	1.2	0.7	0.05	0.0	95.4	5.5	1.6	.....	0.2	3.4	.....	.....	6.0	84.3	89.9	3.0	−0.3	8.5	4
5.3	.....	0.04	0.0	0.0	Trace	0.0	0.9	0.7	0.05	0.0	102	3.9	1.4	0.0	0.2	4.0	.....	.....	5.0	88.4	93.2	2.1	−0.3	8.4	5
5.7	.....	.....	.....	.....	.....	.....	1.1	1.0	.....	0.0	106	6.4	1.7	.....	0.7	4.9	.....	.....	9.2	96.3	103	2.4	−0.1	8.2	6
6.1	.....	.....	.....	.....	.....	.....	1.1	0.7	0.05	0.0	114	5.0	1.6	.....	1.0	5.5	.....	.....	7.3	101	108	2.3	−0.2	8.2	7
6.1	.....	0.03	0.0	0.0	0.0	0.0	1.0	0.8	0.1	0.0	119	4.3	1.4	0.0	0.5	6.4	.....	.....	7.2	105	111	2.0	−0.1	8.1	8
4.6	.....	.....	.....	.....	.....	.....	0.9	0.6	0.15	0.0	85.1	4.1	1.2	.....	1.5	4.1	.....	.....	4.5	74.3	81.1	2.5	−0.6	8.8	9
3.9	.....	.....	.....	.....	.....	.....	0.8	0.6	0.15	0.0	73.0	3.9	2.6	.....	0.2	5.0	.....	.....	6.8	66.7	73.2	2.5	−0.8	9.2	10
4.0	0.51	0.05	0.0	0.0	0.0	0.0	0.9	0.6	0.1	0.0	79.0	3.9	1.1	0.0	0.3	3.4	.....	.....	4.5	69.3	74.3	2.7	−0.7	9.0	11
																									12
5.0	.....	.....	.....	.....	.....	.....	0.8	0.6	0.05	0.0	88.1	6.7	1.0	.....	1.0	5.0	.....	0.00	8.4	**80.7**	**87.6**	2.1	−0.5	8.7	13
5.1	.....	.....	.....	.....	.....	.....	1.0	0.6	0.1	0.0	92.9	4.8	1.5	.....	0.5	5.1	.....	.....	7.9	84.1	89.6	2.5	−0.1	8.2	14
5.0	0.02	0.02	0.0	0.0	Trace	0.0	1.2	0.8	0.1	0.0	95.4	4.8	1.0	0.0	0.2	5.9	.....	.....	6.6	84.9	91.7	2.9	−0.5	8.6	15
at GERALDTON, ONTARIO																									
6.3	0.07	0.01	0.01	0.02	0.3	0.1	0.9	0.5	0.1	0.0	132	9.9	1.2	0.0	0.4	3.4	.....	.....	12.1	121	126	1.6	+0.1	7.7	16
near GERALDTON, ONTARIO																									
4.8	.....	0.02	0.0	0.0	Trace	0.0	1.3	0.8	0.0	0.0 (0)	91.5 (88)	5.8	1.6	0.0	0.2	5.2	.....	.....	3.3 (6.5)	78.4 (78.6)	88.3	3.4	−0.2	8.4	17
5.2	0.20	0.02	0.0	0.0	0.0	0.0	1.0	0.8	0.2	0.0	93.3	4.6	1.0	0.0	0.3	6.3	.....	.....	7.3	83.8	90.1	2.5	−0.4	8.5	18
east of LONGLAC, ONTARIO																									
6.3	0.20	0.03	0.0	Trace	Trace	0.0	0.8	0.5	0.1	0.0 (0)	109 (110)	3.3	1.1	0.0	0.1	5.7	.....	.....	7.8 (5)	96.8 (95.0)	99.6	1.8	0.0	8.0	19
east of LONGLAC, ONTARIO																									
7.8	.....	0.05	0.0	0.0	Trace	0.1	1.5	0.7	0.0	0.0	149	4.8	1.4	0.0	0.1	5.6	.....	.....	1.2	123 (125)	132	2.6	+0.2	7.6	20
7.5	0.11	0.03	0.0	0.0	Trace	0.0	1.0	0.6	0.2	0.0 (0)	129 (134)	5.7	0.9	0.0	0.2	4.9	.....	.....	8.8 (10)	114 (120)	118	1.9	+0.6	6.7	21
near PAGWA RIVER, ONTARIO																									
14.4	.....	0.03	0.0	Trace	.....	.....	1.9	1.2	.....	0.0	259	6.0	2.2	.....	1.6	9.7	.....	.....	6.1	219	229	1.8	+1.3	6.3	22
8.3	.....	0.05	.....	.....	0.0	0.02	1.6	1.1	0.0	0.0	160	4.9	2.0	0.1	0.1	4.8	.....	.....	1.6	133	141	2.5	+0.5	7.2	23
5.2	.....	0.06	0.0	0.21	0.0	0.0	0.8	0.5	0.1	0.0	88.9	3.6	1.3	0.0	0.1	3.3	.....	.....	7.9	80.8	82.6	2.1	−0.2	8.4	24
6.5	.....	0.05	0.0	0.0	0.0	0.0	0.9	0.6	0.15	0.0	127	3.7	1.8	0.0	0.2	8.2	.....	.....	2.9	107	115	1.8	0.0	7.9	25
6.2	.....	.....	.....	.....	.....	.....	0.7	0.4	0.1	0.0	98.5	2.2	0.8	.....	0.2	5.1	.....	0.00	9.1	89.9	89.9	1.6	−0.5	8.6	26
																									27
6.4	.....	.....	.....	.....	.....	.....	1.0	0.5	.....	0.0	118	3.9	3.3	.....	0.1	4.9	.....	.....	12.3	109	111	2.0	−0.0	7.9	28
																									29
																									30

TABLE II – (Continued)

Chemical Analyses of Surface Waters in the Hudson Bay Drainage Basin

(In parts per million)

No.	Date of collection	Storage period (Days)	Stream discharge (Second-feet): On sampling date	Stream discharge (Second-feet): Monthly mean	Water temperature (°F.)	Oxygen consumed by $KMnO_4$	Carbon dioxide (calculated) (CO_2)	pH	Colour (Hazen) (Units)	Turbidity (Units)	Suspended matter: Dried at 105°C.	Suspended matter: Ignited at 550°C.	Residue on evaporation dried at 105°C. (Dissolved solids): P.P.M.	Residue on evaporation dried at 105°C. (Dissolved solids): Tons per acre-foot	Residue on evaporation dried at 105°C. (Dissolved solids): Tons per day	Loss on ignition at 550°C.	Specific conductance micromhos K × 10⁶ at 25°C.	Calcium (Ca)
1	Mar. 16/59	24:73	Ice †			11.2	4	7.2	45	7	8.4	4.2	294			146		48.1
2	Apr. 16	27:42	Ice				1	7.3	30	0.5			134			114		44.0
3	May 2	24:31	3'> N			13.0	2	7.8	90	9	35	16	114			94		34.2
4	May 13	34:42					1	7.3	90	5								
5	May 24	16:23				16.4	5	7.6	80	5	19	15	118			98.4		39.7
6	June	No sample taken																
7	July	No sample taken																
8	Aug. 28	31:59	8'			18.4	2	8.0	90	2			258			52.4		84.1
9	Sept.	No sample taken																
10	Oct. 29	11:126			38	23.6	2	7.8	30	0.8								39.1
11	Nov.	No sample taken																
12	Dec. 1	30:87			39		6	7.6	35	6								40.1
13	Jan. 21/60	56:48	4'		32		5	7.7	5	3								43.2
14	Feb.	No sample taken																
15	Mar.	No sample taken																
16	Apr.	No sample taken																
17	May	No sample taken																
18	June 12	15:21	Low		55		3	8.0	20	2								47.4
19	July 17/59	54:25	Low		50		2	8.2	140	3.8								44.7
20	Sept. 12	162:204	Low		50		2	8.2	25	2								41.4
21	Oct. 19	100:198	Low		40	17.2	3	7.8	120	3.4			156			43.2		33.8
22	Nov. 15	59:125	Medium		36		6	7.5	145	3.8								34.4
23	Dec. 15	29:102	Low				5	7.6	120	1								32.2
24	Jan. 61	No sample taken																

† Corrector's estimate of river level

STATION NO. 103 – MOUNT LAKE (OGOKI RIVER)

25	July 17/59	13:25		9,720	50	9.5	2	7.3	40	0.8			56.4	0.077		32.2	52.4	7.0
26	Aug. 24	10:21		5,740	62		2	7.4	45	0.8							52.8	7.7
27	Sept.	No sample taken		5,100														
28	Oct. 5	18:140		4,370	50	12.1	3	7.2	35	2							54.4	9.8

* At the control dam at Waboose Rapids, 70 miles northwest of Nakina, Lat. 50° 45' 54", Long. 87° 59' 56"

STATION NO. 104 – KEEZHIK LAKE*

29	June 30/61	18:28	Low		64	8.8	2	7.8	20	2							128	18.3

* North of Armstrong, Ont.

STATION NO. 105 – TROUTFLY LAKE

30	June 30/61	18:28	Low		60	3.3	2	8.1	0	0							207	42.6

STATION NO. 106 – AZURE LAKE

31	Aug. 18/60	20:25	1' < spring high		64	3.6	1	8.2	15	0							207	42.3
32	1960					2.8	1	8.3	0								208	
33	June 30/61	18:28	Low		60	3.1	2	8.1	0	0							207	42.2
34	June 30	18:28	Low		60	2.2	2	8.1	0	0							207	42.7

STATION NO. 107 – SMALL LAKES

35	1960(a)					4.0	1	8.1	0	0							122	
36	Aug. 17/60(b)	21:26			70	5.3	5	7.0	15	0.4							81.5	12.0
37	Aug. 17/60(c)	21:26			70	5.9	5	6.5	15	0.8							80.1	20.4
38	Aug. 18/60(d)	20:25	1'< spring high		72	5.5	4	7.5	15	0.4							77	18.5
39	Aug. 18/60(e)	20:25	½'< spring high		72	5.6	5	6.6	15	2							10.8	1.1
40	Aug. 20/60(f)	18:23			72	5.7	4	7.5	15	0.6							139	22.6
41	Aug. 30/61(g)	14:18	Low		65	0.9	2	8.0	0								225	36.2

(a) near Azure Lake 51°39' N – 88°58' W
(b) at 51°40' N – 89°00' W
(c) at 51°39' N – 89°01' W
(d) at 51°38' 30" N – 88°59' 30" W
(e) at 51°38' 25" N – 88°59' 20" W
(f) at 51°39' N – 88° 57' W
(g) at 51°31' N – 88°44' W

TABLE II – (Continued)

Chemical Analyses of Surface Waters in the Hudson Bay Drainage Basin

(In parts per million)

Magnesium (Mg)	Iron (Fe) Total	Iron (Fe) Dissolved	Manganese (Mn)	Aluminum (Al)	Copper (Cu)	Zinc (Zn)	Alkalis Sodium (Na)	Alkalis Potassium (K)	Ammonia (NH_3)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulphate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Silica (colorimetric) (SiO_2)	Phosphate (PO_4)	Boron (B)	Hardness as $CaCO_3$ Non-carbonate	Hardness as $CaCO_3$ Total	Sum of constituents	Per cent sodium	Saturation index	Stability index	No.
near PAGWA RIVER, ONTARIO (concluded)																									
11.4	1.0	0.03	0.00	0.0	0.0	0.0	1.5	0.8	0.1	0.0	191	5.7	1.3	0.0	0.8	9.0	0.02	.....	11.6	168	173	1.9	+0.4	7.1	1
8.0	.....	.....	0.00	.....	.....	.....	1.1	0.7	0.1	0.0	145	3.3	1.0	.....	0.2	6.9	0.00	.....	5.8	125	129	1.9	0.0	7.9	2
4.9	0.81	0.05	0.00	0.0	Trace	0.0	0.8	0.7	0.1	0.0	87.5	5.2	1.3	0.0	0.6	2.2	0.06	.....	8.2	80.0	82.9	2.1	−0.4	8.6	3
4.4	.....	.....	.....	.....	.....	.....	0.5	0.5	0.2	0.0	72.2	1.2	1.0	.....	0.8	2.8	.....	0.00	7.8	67.0	66.3	1.6	−1.0	9.4	4
5.0	0.07	0.40	0.00	0.0	0.0	0.0	1.5	0.5	0.1	0.0	76.2	1.7	1.2	.....	.....	3.6	.....	.....	10.2	72.7	72.4	4.2	−0.9	9.4	5
																									6
																									7
7.0	0.20	0.06	0.00	0.0	Trace	0.0	1.6	0.7	0.6	0.0	125	5.4	2.2	0.0	0.2	5.4	.....	.....	7.2	110	117	3.0	+0.1	7.8	8
																									9
6.0	0.14	0.08	0.00	0.0	0.0	0.0	1.9	0.7	0.2	0.0	96.8	2.1	2.0	0.0	1.0	8.0	0.02	.....	8.9	88.3	95.0	4.4	−0.8	9.4	10
																									11
9.6	.....	.....	.....	.....	.....	.....	1.2	0.8	0.1	0.0	146	3.2	1.1	.....	0.7	5.8	.....	.....	8.1	128	130	2.0	−0.2	8.0	12
9.4	0.20	0.04	0.04	0.08	Trace	0.05	3.4	0.9	0.2	0.0	163	10.0	11.7	0.1	0.8	5.0	0.02	.....	18.1	152	167	4.7	+0.1	7.5	13
																									14
																									15
																									16
																									17
12.7	0.19	0.04	0.00	0.0	Trace	0.0	0.9	0.6	0.2	0.0	121	2.6	1.2	0.0	0.5	4.0	0.06	.....	5.5	104	103	1.8	−0.1	8.2	18
6.8	.....	.....	.....	.....	.....	.....	1.5	0.6	0.2	0.0	137	2.2	1.4	.....	0.6	7.0	.....	.....	0.2	112	121	2.8	+0.3	7.6	19
10.2	.....	.....	.....	.....	.....	.....	1.6	0.8	.....	0.0	167	3.2	1.0	.....	0.4	7.1	.....	.....	5.9	147	147	2.4	+0.5	7.2	20
7.4	0.17	0.04	0.0	0.0	0.0	0.0	1.7	0.6	0.2	0.0	125	3.9	1.4	0.55	0.8	7.9	0.0	.....	7.0	110	118	3.2	−0.2	8.2	21
6.6	.....	.....	.....	.....	.....	.....	0.9	0.4	0.2	0.0	96.8	6.1	1.3	.....	0.6	4.6	.....	.....	8.7	88.1	92.5	2.2	−0.7	8.9	22
8.2	.....	.....	.....	.....	.....	.....	1.1	0.6	0.1	0.0	130	5.3	1.0	.....	0.6	5.2	.....	.....	8.6	11.4	116	2.0	−0.3	8.2	23
																									24
at WABOOSE DAM, ONTARIO																									
1.6	0.16	0.09	0.0	0.04	0.0	0.0	0.9	0.4	0.1	0.0	27.3	2.1	1.5	0.0	0.2	3.3	0.04	.....	3.1	25.5	31.2	6.8	−1.7	11	25
1.6	0.12	.....	.....	.....	.....	.....	0.6	0.5	0.2	0.0	28.0	2.1	0.8	.....	0.0	2.2	.....	.....	2.3	25.3	29.2	4.8	−1.6	11	26
																									27
1.9	0.33	0.03	0.0	0.0	0.0	0.0	0.8	0.5	0.1	0.0	33.5	2.2	0.6	0.0	0.4	4.0	0.03	.....	4.8	32.3	36.7	5.8	−1.7	11	28
north of ARMSTRONG, ONTARIO at 51°45' N – 88°38' W																									
5.6	.....	.....	0.0	0.0	Trace	0.0	1.0	0.8	0.1	0.0	76.9	2.2	0.8	.....	0.8	2.8	.....	.....	6.3	65.8	70.2	3.2	−0.5	8.8	29
at 51°42' N – 88°54' W – ONTARIO																									
7.8	.....	0.02	0.00	0.0	Trace	0.0	0.9	1.0	0.05	0.0	132	1.4	0.3	0.07	1.5	3.9	.....	.....	0.8	109	113	1.7	+0.2	7.7	30
at 51°38' 30" N – 88°58' 30" W – ONTARIO																									
8.3	.....	.....	.....	.....	.....	.....	0.7	0.9	0.0	0.0	137	4.1	0.8	.....	0.0	5.1	.....	.....	2.2	115	120	1.6	+0.3	7.6	31
.....	.....	Trace	0.0	.....	.....	.....	2.0	1.1	.....	0.0	147	1.8	0.2	0.09	0.7	9.2	.....	.....	0.0	117	.....	3.5	.....	.....	32
9.3	.....	0.0	0.0	0.02	Trace	0.0	1.0	1.1	0.0	0.0	143	2.5	0.1	0.05	0.9	5.1	.....	.....	1.6	119	123	1.8	+0.3	7.5	33
9.7	.....	0.0	0.0	0.01	0.0	0.0	1.0	1.1	0.0	0.0	143	2.5	0.3	0.05	0.4	5.1	.....	.....	2.2	119	122	1.8	+0.3	7.5	34
near AZURE LAKE – ONTARIO																									
.....	.....	0.01	0.0	.....	.....	.....	1.5	0.7	.....	0.0	80.8	0.7	0.1	0.03	1.2	3.9	.....	.....	0.0	64.4	.....	4.8	.....	.....	35
2.1	.....	.....	.....	.....	.....	.....	1.0	1.0	0.0	0.0	46.6	1.4	1.8	.....	0.0	0.4	.....	.....	0.6	38.8	42.6	5.2	−1.7	10	36
0.6	.....	.....	.....	.....	.....	.....	0.2	0.5	0.1	0.0	9.9	1.5	1.0	.....	0.0	0.3	.....	.....	0.4	8.5	11.4	5.5	−3.6	14	37
4.0	.....	.....	.....	.....	.....	.....	0.4	0.6	0.0	0.0	72.4	3.3	0.7	.....	0.0	1.2	.....	.....	3.0	62.4	64.3	1.7	−0.9	9.3	38
0.3	.....	.....	.....	.....	.....	.....	Trace	0.4	0.0	0.0	3.8	0.4	0.7	.....	0.0	0.2	.....	.....	0.8	3.9	5.0	11	−4.2	15	39
4.1	.....	.....	.....	.....	.....	.....	0.5	0.6	0.0	0.0	84.8	3.3	0.5	.....	0.0	1.2	.....	.....	2.3	71.9	74.0	1.8	−0.8	9.1	40
9.8	0.02	.....	0.0	.....	.....	.....	1.4	1.6	0.0	0.0	142	2.3	0.6	0.09	0.8	6.6	.....	.....	0.0	116	123	2.5	+0.1	7.8	41

TABLE II – (Continued)

Chemical Analyses of Surface Waters in the Hudson Bay Drainage Basin

(In parts per million)

No.	Date of collection	Storage period (Days)	Stream discharge (second-feet) On sampling date	Stream discharge (second-feet) Monthly mean	Water temperature (°F.)	Oxygen consumed by $KMnO_4$	Carbon dioxide (calculated) (CO_2)	pH	Colour (Hazen Units)	Turbidity (Units)	Suspended matter Dried at 105°C.	Suspended matter Ignited at 550°C.	Residue on evaporation dried at 180°C. (Dissolved solids) P.P.M.	Tons per acre foot	Tons per day	Loss on ignition at 550°C.	Specific conductance $k \times 10^6$ at 25°C.	Calcium (Ca)
STATION NO. 108 – LAKE, SOUTH of MIMINISKA LAKE																		
1	Aug. [illegible]	[illegible]	High		[illegible]	6.6	3	[illegible]	15	1				...	...		[illegible]	[illegible]
STATION NO. 109 – SMALL LAKE																		
2	1960	...				[illegible]	18	[illegible]	15	...							[illegible]	
STATION NO. 110 – SMALL LAKE																		
3	1960	...	...		...	3.4	2	8.0	10	...							[illegible]	
STATION NO. 111 – [illegible] LAKE																		
4	1960	...	...			5.4	1	8.2	16	...					...	...	[illegible]	
STATION NO. 112 – SMALL LAKE																		
5	1960	...		...	...	4.8	13	7.4	10	...		...					28[illegible]	
STATION NO. 113 – OTOSKWIN RIVER																		
6	July 23/60	[illegible]		...	70	......	4	7.1	125	0.8	...	...	...				58.3	[illegible]
STATION NO. 114 – ATTAWAPISKAT RIVER																		
7	July 23/57	...	......	......	....	.....	3	7.5	60	....	....	......	86.0	0.117		38.0	[illegible]	[illegible]
STATION NO. 115 – [illegible] RIVER																		
8	July 17/59	5:10	...	...	68	16.5	2	7.3	80	0.4	....	...	56.4	0.077	...	33.2	[illegible]	[illegible]
STATION NO. 116 – KAWINOGANS LAKE																		
9	July 24/60	36:135	....	....	62	......	5	7.1	75	0	...	.....	...	....			74.4	12.0
STATION NO. 117 – BADESDAWA RIVER																		
10	July 31/61	17:21	Low	......	68	11.8	7	7.3	80	...	...	...	...		...		[illegible]	[illegible]
STATION NO. 118 – SMALL LAKE																		
11	July 3/61	15:25	High	....	62	5.4	2.5	7.8	5	0.4	......	....	....	....		.....	157	23.3
STATION NO. 119 – SKUA LAKE																		
12	July 31/61	17:21	Normal	......	70	1.6	3	7.8	0	....	....	......	......	...	...	...	[illegible]	[illegible]
STATION NO. 120 – TAR LAKE																		
13	July 3/61	15:25	....	....	....	11.5	3	7.5	30	1	...	...	...	....	...	...	91.3	[illegible]
STATION NO. 121 – [illegible] RIVER																		
14	July 18/59	4:9	[illegible] high	......	68	19.3	3	7.5	100	5	9.5	4.7	78.0	0.106	.	33.6	83.8	[illegible]

TABLE II – (Continued)

Chemical Analyses of Surface Waters in the Hudson Bay Drainage Basin

(In parts per million)

Magnesium (Mg)	Iron (Fe) Total	Iron (Fe) Dissolved	Manganese (Mn)	Aluminum (Al)	Copper (Cu)	Zinc (Zn)	Alkalis Sodium (Na)	Alkalis Potassium (K)	Ammonia (NH_3)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulphate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Silica (colorimetric) (SiO_2)	Phosphate (PO_4)	Boron (B)	Hardness as $CaCO_3$ Non-carbonate	Hardness as $CaCO_3$ Total	Sum of constituents	Per cent sodium	Saturation index	Stability index	No.
at 51°31' N – 88°44' W – ONTARIO																									
8.1	.....	.....	.....	.....	.....	.....	1.2	0.7	0.0	0.0	144	4.3	0.9	....	0.0	6.9	.....	.....	2.3	121	128	2.6	0.0	7.9	1
at 51°09' 45" N – 88°59' 30" W – ONTARIO																									
.....	.....	0.36	0.01	.....	.....	.....	1.0	0.4	.....	0.0	11.0	0.3	0.8	0.02	0.2	0.3	.....	.....	1.7	10.7	.....	15.5	.....	.....	2
south of SHABUSKWIA LAKE about 51°13' 30" N – 89°01' W – ONTARIO																									
.....	.....	0.12	0.0	.....	.....	.....	3.1	1.8	.....	0.0	128	1.5	3.9	0.08	0.3	5.7	.....	.....	0.0	104	.....	6.0	.....	.....	3
at 51°14' N – 89°01' W, ONTARIO																									
.....	.....	0.11	0.0	.....	.....	.....	1.4	0.4	.....	0.0	86.4	0.9	0.4	0.09	1.9	6.6	.....	.....	2.0	70.5	.....	4.1	.....	.....	4
east of SHABUSKWIA LAKE, about 51°17' N – 88°59' W – ONTARIO																									
.....	.....	0.10	0.0	.....	.....	.....	1.4	1.1	.....	0.0	185	1.7	0.5	0.09	0.4	8.7	.....	.....	1.1	153	.....	1.9	.....	.....	5
at 51°38' N – 90°43' W – ONTARIO																									
1.7	0.19	0.0	0.0	0.0	0.0	0.0	0.5	0.3	0.4	0.0	31.1	3.8	1.0	0.0	0.1	2.4	0.00	.....	4.6	30.1	34.2	3.4	–1.9	11	6
above junction of MUKETEI RIVER at 53°08' N – 85°20' W – ONTARIO																									
2.8	0.09	....	0.0	.....	.....	.....	0.6	0.4	.....	0.0	56.3	0.7	1.2	....	0.0	.....	0.00	.....	4.7	50.9	.....	2.5	–1.0	9.5	7
at 51°35' N – 91°20' W. – ONTARIO																									
1.7	0.14	0.07	0.0	0.0	Trace	0.0	0.5	0.4	0.3	0.0	28.2	3.0	1.0	0.0	0.3	1.8	.....	.....	5.1	28.2	31.1	3.6	–1.7	11	8
north of LAKE ST. JOSEPH, at 51°20' N – 90°42' W – ONTARIO																									
2.0	0.14	0.0	0.0	0.0	0.0	0.0	0.5	0.5	0.4	0.0	42.2	4.4	1.0	0.0	0.1	2.1	0.00	.....	3.5	38.1	43.4	2.7	–1.7	11	9
at mouth at 51°48' N – 89°38' W – ONTARIO																									
3.9	0.21	.....	0.04†	.....	.....	.....	0.7	0.4	0.3	0.0	80.1	2.4	1.2	0.16	0.9	3.5	.....	.....	6.7	72.4	75.2	2.0	–1.0	9.3	10
† Total																									
north of MARGAREE LAKE, 51°48' N – 89°30' W – ONTARIO																									
5.6	.....	0.01	0.0	0.01	0.01	0.0	0.7	0.7	0.1	0.0	97.2	0.7	0.3	0.05	1.1	2.0	.....	.....	1.6	81.3	82.3	1.8	–0.3	8.4	11
at 51°45' N – 89°24' W – ONTARIO																									
8.0	0.05	.....	0.0 †	.....	.....	.....	1.0	1.0	0.0	0.0	125	0.6	0.9	0.06	0.6	4.2	.....	.....	2.3	105	106	2.0	–0.2	8.2	12
† Total																									
at 51°43' N – 89°22' W – ONTARIO																									
3.3	.....	0.02	0.0	0.0	0.01	0.0	0.5	0.5	0.3	0.0	52.9	0.7	0.4	0.10	0.5	0.9	.....	.....	4.6	48.0	46.7	2.2	–1.1	9.7	13
at 52°08' N – 88°34' W – ONTARIO																									
2.7	0.33	0.10	0.0	0.0	Trace	0.0	0.7	0.3	0.2	0.0	49.9	2.5	1.5	....	0.3	2.5	.....	.....	6.2	46.3	49.2	3.1	–1.1	9.7	14

TABLE II – (Continued)

Chemical Analyses of Surface Waters in the Hudson Bay Drainage Basin

(In parts per million)

No.	Date of collection	Gauge-height record (Days)	Stream discharge (Second-feet) On date of collection	Stream discharge (Second-feet) Monthly mean	Water temperature (°F.)	Hydrogen ion concentration (pH)	Carbon dioxide (calculated) (CO_2)	Iron (Fe)	Colour (Platinum Units)	Turbidity (Units)	Dissolved matter: Dried at 105°C.	Dissolved matter: Ignited at 550°C.	Hardness as CaCO₃: Non-carbonate	Hardness as CaCO₃: Total	Hardness as CaCO₃: Tons per acre-foot	Hardness as CaCO₃: Tons per day	Loss on ignition at 550°C.	Specific conductance at K × 10⁶ at 25°C.	Calcium
																		STATION NO. 122 – SMALL LAKE*	
1	Aug. [illegible]	[illegible]	[illegible]	[illegible]	70	7.8	7	0.6	25									66.3	9.5
	* In Attawapiskat River drainage basin																		
																		STATION NO. 123 – MISSISA LAKE *	
2	July 2/61	[illegible]	Low	[illegible]	59	6.6	4	7.6	15	20								34.1	2.2
	* In Attawapiskat River drainage basin																		
																		STATION NO. 124 – DRUMLIN LAKE *	
3	Aug. 29/61	28:34	Low	.....	70	9.0	8	6.8	35	.....	.....	.....	.....	.....	.....	.....	.....	61.3	8.7
	* In Attawapiskat River drainage basin																		
																		STATION NO. 125 – HAWLEY LAKE (SUTTON RIVER)	
4	June 5/57	32:40	.....	.....	45	.....	2	8.0	10	.....	.....	.....	145	0.197	.....	.....	34.0	227	42.1
																		STATION NO. 126 – PIPESTONE RIVER	
5	July 27/55	5:10	.....	.....	69	16.4	3	7.4	80	0	.....	.....	80.0	0.109	.....	.....	36.8	72.8	12.3
																		STATION NO. 127 – KANUCHUAN LAKE*	
6	Sept. 2/61	24:30	Medium	.....	70	2.6	3	7.8	5	.....	.....	.....	.....	.....	.....	.....	.....	176	27.3
	* In Winisk River drainage basin																		
																		STATION NO. 128 – [illegible] LAKE*	
7	Sept. 2/61	24:30	Very low	.....	70	4.4	4	7.3	15	.....	.....	.....	.....	.....	.....	.....	.....	122	17.5
	* In Winisk River drainage basin																		
																		STATION NO. 129 – BARTMAN LAKE*	
8	July 18/59	4:9	[illegible]*	.....	73	8.2	0.5	8.4	25	0.8	.....	.....	83.2	0.113	.....	.....	23.2	134	21.6
	* In Winisk River drainage basin																		
																		STATION NO. 130 – SMALL LAKE *	
9	1960	.....	.....	.....	.....	5.1	3.5	7.8	10	.....	.....	.....	.....	.....	.....	.....	.....	208	.....
	* In Severn River drainage basin																		
																		STATION NO. 131 – ISLAND LAKE*	
10	June 12/53	7:33	.....	.....	58	.....	1	7.9	30	2	.....	.....	81.8	0.111	.....	.....	32.4	104	13.5
	* In Gods River drainage basin																		
																		STATION NO. 132 – GODS LAKE at GODS LAKE*	
11	June 12/53	7:33	.....	.....	56	.....	2	7.8	10	2	.....	.....	87.4	0.119	.....	.....	34.0	122	19.4
	* In Gods River drainage basin at Gods Lake, Ontario.																		
																		STATION NO. 133 – ENNADAI LAKE*	
12	July 13/52	201:281	.....	.....	.....	.....	2	7.3	Slight	Slight	.....	.....	.....	.....	.....	.....	.....	43.9	5.0
	* In Kazan River drainage basin																		
																		STATION NO. 134 – LAKE*	
13	Aug. 18/52	165:245	.....	.....	.....	.....	3	7.1	Slight	Slight	.....	.....	.....	.....	.....	.....	.....	63.*	6.5
	* Sampled 3 ft from shore at 2½ ft depth in Wilson River drainage basin.																		

TABLE II – (Continued)

Chemical Analyses of Surface Waters in the Hudson Bay Drainage Basin

(In parts per million)

Magnesium (Mg)	Iron (Fe) Total	Iron (Fe) Dissolved	Manganese (Mn)	Aluminum (Al)	Copper (Cu)	Zinc (Zn)	Alkalis Sodium (N)	Alkalis Potassium (K)	Ammonia (NH_3)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulphate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Silica (colorimetric) (SiO_2)	Phosphate (PO_4)	Boron (B)	Hardness as $CaCO_3$ Non-carbonate	Hardness as $CaCO_3$ Total	Sum of constituents	Per cent sodium	Saturation index	Stability index	No.
at 52°45' N – 86°03' W – ONTARIO																									
2.5	0.14	.....	0.03	.....	0.0	.....	0.6	0.5	0.3	0.0	36.6	1.9	1.0	0.07	0.0	0.2	.....	.....	2.7	32.7	34.1	3.8	−2.1	11	1
at 52°16' N – 85°07' W – ONTARIO																									
4.1	.....	0.03	0.0	0.0	Trace	0.0	0.9	0.2	0.05	0.0	85.2	1.0	0.4	0.04	1.3	0.5	.....	.....	2.0	71.9	72.4	2.6	−0.6	8.8	2
at 52°35' N – 87°02' W – ONTARIO																									
2.3	0.09	.....	0.02†	.....	0.0	.....	0.8	0.8	0.3	0.0	32.2	2.3	1.3	0.12	0.0	1.2	.....	.....	4.7	31.1	33.4	5.1	−2.2	11	3
† Total																									
at 54°34' N – 84°38' W – ONTARIO																									
6.8	0.02	.....	0.0	.....	.....	.....	5.3	0.6	.....	0.0	131	4.5	5.9	.....	0.0	.....	0.00	.....	1.0	108	.....	9.5	+0.1	7.8	4
at 52°13' N – 90°47' W – ONTARIO																									
2.3	0.16	0.07	0.0	0.0	Trace	0.0	0.5	0.3	0.2	0.0	41.6	3.0	0.7	0.0	0.6	2.6	.....	.....	6.1	40.2	42.8	2.6	−1.3	10	5
at 52°55' N – 87°41' W – ONTARIO																									
5.6	0.03	.....	0.02	.....	0.0	.....	1.0	0.6	0.0	0.0	109	1.5	1.1	0.10	0.0	4.4	.....	.....	1.7	91.4	95.4	2.3	−0.2	8.2	6
at 52°52' N – 87°22' W – ONTARIO																									
4.2	0.04	.....	0.02	.....	0.0	.....	0.9	0.7	0.0	0.0	48.8	14.9	0.9	0.12	0.0	2.0	.....	.....	21.0	61.0	65.2	3.1	−1.2	9.7	7
at 52°30' N – 87°37' W – ONTARIO																									
4.3	0.06	0.03	0.0	0.06	Trace	0.0	0.9	0.8	0.1	1.3	81.6	1.1	0.6	0.0	0.3	4.2	.....	.....	2.5	71.6	75.4	2.6	+0.2	8.0	8
at 52°32' N – 91°23' W – ONTARIO																									
.....	.....	0.07	0.0	.....	.....	.....	2.6	2.6	.....	0.0	135	2.7	0.7	0.04	0.4	9.0	.....	.....	0.0	108	.....	4.8	.....	.....	9
near MISSION at 53°52' N – 94°42' W – MANITOBA																									
3.4	.....	0.11	.....	.....	.....	.....	2.4	1.3	.....	0.0	58.6	2.1	1.3	0.0	1.2	4.2	.....	0.00	0.0	47.6	58.4	9.6	−0.7	9.3	10
at 54°41' N – 94°09' W – MANITOBA																									
3.6	.....	0.11	.....	.....	.....	.....	2.0	1.3	.....	0.0	80.0	2.6	0.8	0.0	0.2	2.8	.....	0.00	0.0	63.4	72.2	6.3	−0.5	8.8	11
KEEWATIN DISTRICT, N.W.T.																									
1.4	.....	.....	.....	.....	.....	.....	2.0	1.1	.....	0.0	22.0	1.6	0.4	....	0.0	1.2	.....	.....	0.2	18.2	23.5	1.8	−2.2	12	12
at 62°19' N – 93°30' W, KEEWATIN DISTRICT, N.W.T.																									
0.9	.....	.....	.....	.....	.....	.....	4.5	1.7	.....	0.0	19.5	2.5	4.8	.....	1.4	1.3	.....	.....	3.8	19.8	33.2	3.1	−2.3	12	13

TABLE II – (Continued)

Chemical Analyses of Surface Waters in the Hudson Bay Drainage Basin

(In parts per million)

No.	Date of collection	Time	Stream discharge (Measurement)		Water temperature (°F.)	Dissolved oxygen (O)	Carbon dioxide (CO_2) (calculated)	pH	Hardness as $CaCO_3$	Hardness non-carbonate	Suspended matter		Residue on evaporation dried at 105°C. (Dissolved solids)			Loss on ignition at 525°C.	Dissolved constituents (parts per million) at 105°C.	Specific conductance (micromhos per cm. at 25°C.)
			On sampling date	Maximum mean							Silica (SiO_2) at 105°C.	Iron (Fe) at 105°C.	P.P.M.	Tons per acre-foot	Tons per day			
		(hours)			(°F.)		(CO_2)											
STATION NO. 135 – SAKAW LAKE																		
1	1964		At 30 meter depth			2	6.8	10	0								55.5	
STATION NO. 136 – SAKAW LAKE																		
			Depth sampled															
2	1964		at surface		2.0	3	6.7	5	0								38.6	1.7
3			10 meters			2	7.0	5	0								43.5	1.4
4			20 meters			2	6.9	5	0								46.7	1.4
5			30 meters			1	7.0	5	0								334	1.8
6			40 meters			2	6.9	5	0								56	2.1
7			50 meters			2	7.0	10	0								90	4.1
8			60 meters			2	6.8	10	0								1,185	7.5
STATION NO. 137 – NORTON LAKE*																		
9	1964				2.9	4	6.9	15	0								43.0	3.5
STATION NO. 138 – NAT RIVER*																		
10	Oct. 14/63	16:24			50	3	7.5	70	0								125	18.1
STATION NO. 139 – GROUNDHOG RIVER*																		
11	Oct. 14/63	14:21			54	3	7.4	45	0.3								95.6	13.3
STATION NO. 140 – SMALL CREEK																		
12	Oct. 14/63	16:24			50	5	7.1	135	0								82.0	11.9
STATION NO. 141 – OPISHING RIVER*																		
13	Oct. 14/63	16:29			54	2	7.4	55	0.1								88.4	11.1
STATION NO. 142 – SCORCH RIVER*																		
14	Oct. 14/63	11:15			54	4	7.3	70	0.1								89.2	12.5

* Sampled at highway No. 101 bridge.

* Sampled at surface

* Sampled at highway No. 101 bridge.

* Sampled from highway No. 101 bridge near Timmins, Ont.

* Sampled at highway No. 101 bridge.

* Sampled at highway No. 101 bridge.

TABLE II – (Continued)

Chemical Analyses of Surface Waters in the Hudson Bay Drainage Basin

(In parts per million)

Magnesium (Mg)	Iron (Fe) Total	Iron (Fe) Dissolved	Manganese (Mn)	Aluminum (Al)	Copper (Cu)	Zinc (Zn)	Alkalis Sodium (N)	Alkalis Potassium (K)	Ammonia (NH_3)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulphate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Silica (colorimetric) (SiO_2)	Phosphate (PO_4)	Boron (B)	Hardness as $CaCO_3$ Non-carbonate	Hardness as $CaCO_3$ Total	Sum of constituents	Per cent sodium	Saturation index	Stability index	No.
at 64° 17' 24" N – 95° 55' W – KEEWATIN DISTRICT, N.W.T.																									
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.0	8.9	.....	4.6	.....	.....	.....	.....	.....	3.4	10.7	.....	.....	.....	.....	1
at 64° 7' 24" N – 94° 46' 24" W – KEEWATIN DISTRICT, N.W.T.																									
1.8	.....	0.00	0.00	0.0	.....	.....	2.7	0.8	.....	0.0	10.0	1.8	5.6	0.10	0.0	0.2	0.0	.....	3.4	11.6	19.6	32	-3.5	14	2
1.8	.....	.....	0.00	.....	.....	.....	3.8	0.5	.....	0.0	9.3	1.6	7.6	0.09	0.0	0.0	.....	.....	3.3	10.9	21.4	42	-3.3	14	3
2.0	.....	.....	0.00	.....	.....	.....	5.7	0.5	.....	0.0	8.4	4.1	11.3	0.09	0.0	0.2	.....	.....	5.0	11.9	29.4	50	-3.4	14	4
7.8	.....	.....	0.00	.....	.....	.....	47.3	2.2	.....	0.0	8.5	13.6	88.8	0.09	0.0	0.1	.....	.....	29.8	36.8	166	72	-3.3	14	5
14.9	.....	.....	0.00	.....	.....	.....	96.0	4.1	.....	0.0	9.8	26.2	183	0.13	0.0	0.1	.....	.....	58.7	66.7	331	74	-3.3	14	6
20.6	.....	.....	0.00	.....	.....	.....	141	6.2	.....	0.0	11.0	39.0	268	0.13	0.0	0.1	.....	.....	86.0	95.0	485	75	-2.9	13	7
25.9	.....	.....	0.00	.....	.....	.....	185	7.3	.....	0.0	8.8	47.5	342	0.13	0.0	0.2	.....	.....	112	119	617	76	-3.1	13	8
at 60° 0' N – 99° 55' W – KEEWATIN DISTRICT, N.W.T.																									
1.5	.....	0.01	0.00	0.0	.....	.....	1.0	0.8	.....	0.0	17.6	2.6	0.8	0.08	0.0	1.6	0.0	.....	0.6	15.0	19.0	12	-2.8	13	9
near FOLEYET, ONTARIO																									
4.8	0.20	.....	0.00	.....	.....	.....	0.8	0.4	.....	0.0	67.5	5.9	0.2	0.15	0.0	5.9	.....	.....	9.6	65.0	69.5	2.6	-0.9	9.3	10
near FOLEYET, ONTARIO																									
3.6	0.14	.....	0.00	.....	.....	.....	0.7	0.3	.....	0.0	47.8	7.0	0.2	0.12	0.4	3.4	.....	.....	8.8	48.0	52.3	3.0	-1.3	10	11
near TIMMINS, ONTARIO																									
4.1	.....	.....	.....	.....	.....	.....	0.6	0.2	.....	0.0	38.2	7.8	0.1	.....	0.0	5.0	.....	.....	15.3	46.6	48.5	2.7	-1.7	11	12
near FOLEYET, ONTARIO																									
3.4	0.26	.....	0.00	.....	.....	.....	0.7	0.3	.....	0.0	41.1	6.2	0.1	0.11	0.3	4.2	.....	.....	7.9	41.6	46.6	3.5	-1.4	10	13
near FOLEYET, ONTARIO																									
3.8	0.08	.....	0.00	.....	.....	.....	0.6	0.4	.....	0.0	43.5	6.5	0.3	0.15	0.5	3.7	.....	.....	4.1	46.8	49.9	2.7	-1.4	10	14

TABLE II – (Continued)

Chemical Analyses of Surface Waters in the Hudson Bay Drainage Basin

(In parts per million)

STATION NO. 49 (Supplement) – ABITIBI RIVER *

No.	Date of collection	pH	Colour	Turbidity	Suspended matter	Dissolved solids: Total mineral solids	Dissolved solids: Organic dissolved solids	Conductivity: as NaCl	Conductivity: micromhos at 25°C.	Calcium (Ca)	Magnesium (Mg)	Iron (R_2O_3)	Sodium (Na)	Sodium and Potassium (Na)
1	Jan. 6/54	7.58	465	24	30	106	.....	74	.....	19	4	0	4	
2	Feb. 10	7.49	240	28	41	122	.....	62	.....	18	3.6	6.4**	7	
3	Mar. 10	7.69	430	39	44	124	.....	77	.....	19	5.5	2.5	5	
4	Apr. 7	7.67	530	53	67	127	.....	68	.....	20	4	3.5	3	
5	May 5	7.92	235	29	37	90.8	.....	63	.....	16	2.7	4.2	6	.....
6	June 2	7.73	275	20	23	92	.....	58	.....	19	2.5	2.0	.....	.....
7	July 7	7.72	330	14	20	86	.....	58	.....	16	3	2.5	3	
8	Aug. 11	7.55	375	29	34	83	.....	51	.....	17	2	3.5	4	
9	Sept. 23	7.35	36***	21	26	99	.....	60	.....	14	4	9.0	1	
10	Oct. 18	7.80	680	34	38	129.5	.....	67	.....	18	3.5	8.0	5.4	
11	Nov. 3	7.32	610	34	40	110	.....	56	.....	17	3	6.5	3	
12	Dec. 9	7.42	510	30	36	91	.....	53	.....	16	4	3.5	2	.....
13	Jan. 5/55	7.32	500	22	36	8.9	.....	58	.....	17	4	4.0	3	.....
14	Feb. 3	7.18	445	32	44	95.5	.....	74	.....	17	4	5	2	.....
15	Mar. 3	7.23	435	38	43	118	.....	70	.....	18.5	4	9.5	3	.....
16	Apr. 6	7.39	175	31	34	108	.....	80	.....	18	5.5	5.5	2	.....
17	May 6	7.34	100	13	18	82	.....	62	.....	17	4	3	9	.....
18	June 8	7.05	70	8	10	.....	73	60	.....	18	2.5	2	2	.....
19	July 6	7.18	80	10.5	13	.....	80	56	.....	17	3	3.0	3	.....
20	Aug.	No report												
21	Sept. 13	7.07	125	20	22	.....	.....	67	.....	18	5	3.5	1	.....
22	Oct. 5	7.44	280	32	48	.....	.....	67	.....	18	4	5.0	2	.....
23	Nov. 15	7.60	270	32	43	.....	.....	75	.....	18	5.4	9.1	1	
24	Dec. 8	7.61	175	25	36	.....	.....	65	.....	18	4.4	4.5	2	
25	Jan. 4/56	7.42	190	22	28	.....	.....	67	.....	20	3.5	3.0	3	
26	Feb. 8	7.27	165	27	29	.....	.....	72	.....	17	4.3	4.2	4	.....
27	Mar. 3	7.31	122	27	32	.....	.....	74	.....	18	6.2	8.3	3	.....
28	Apr. 11	7.44	105	19.2	23.5	.....	.....	79	.....	24	4.4	2.3	2.5	
29	May 2	7.33	135	16	19	.....	.....	66	.....	19	4	1.9	3	
30	June 7	7.12	118	15	18.5	.....	.....	45	.....	12	3.2	1.5	2	
31	July 4	7.26	95	8.6	14	.....	.....	51	.....	12	4	1.7	1.4	
32	Aug. 15	7.18	104	15	16.5	.....	.....	54	.....	14	4	1.9	3.5	
33	Sept. 26	7.3	133	17	21	.....	68	57	.....	18.0	3.2	5.2	4	
34	Oct. 17	7.2	152	22.9	24.8	.....	73	60	.....	14	5	2.8	9	
35	Nov. 7	7.3	145	25.9	28.9	.....	.....	58	.....	14	5	3.9	3	
36	Dec. 5	7.69	218	34.6	36.0	.....	133	67	.....	17.6	5.4	3.0	0.7	
37	Jan /57	No sample sent out												
38	Feb. 20	7.4	103	28	34.0	.....	.....	70.0	.....	16	4	3.1	1	
39	Mar. 13	7.3	105	28.5	31.5	.....	.....	65.0	.....	16	5	3.8	2.3	
40	Apr. 10	7.0	108	21.8	25.0	.....	.....	72.0	.....	16	6	3.5	4	
41	May 8	7.5	75	12.2	16.0	.....	.....	.....	138	18	3	5.0	2	
42	June 5	7.2	67	12.5	14.0	.....	.....	.....	123	16	5	1.7	3	
43	July 26	7.1	60	30.5	32.5	.....	.....	.....	111	17	4	3.5	3	
44	Aug. 28	7.4	110	32	38.5	.....	.....	.....	107	17	4	4.8	3	
45	Sept.	Report lost												
46	Oct. 30	7.4	60	26	34.5	.....	.....	.....	121	17	5	5.0	3	.....
47	Nov. 20	7.3	60	35	49	.....	.....	.....	130	19	4	3.2	.....	.....
48	Dec. 11	7.7	90	37.0	48.0	.....	83	.....	130	18	4	5.0	4	
49	Jan. 9/58	7.2	50	37	54	.....	111	.....	135	18	4	5.3	3	
50	Feb. 10	7.3	60	30	33.5	.....	.....	.....	140	20	4.5	5.4	0.4	
51	Mar. 5	7.1	80	19.1	32.5	.....	128	.....	145	20	5	5.5	4.6	
52	Apr. 3	7.6	35	48	63	.....	132†	.....	155	21	5.5	5.6	5.4	
53	May 7	7.2	50	26	35	.....	108†	.....	130	17	6	3.0	3.32	
54	June 4	7.0	60	19	25	.....	101	.....	127	16	6	3.5	3	
55	July 3	7.3	70	14	16	.....	112†	.....	130	18	5.5	1.8	2	
56	Aug. 14	7.1	75	15	16	.....	95	.....	113	15.2	4	2.8	2.8	
57	Sept. 10	7.3	105	13	14	.....	104.6†	.....	121	18.4	3.8	2.9	1.8	
58	Oct. 1	7.3	58	60††	.....	.....	94.7	.....	120	15.6	4.4	3.7	.....	3.0
59	Nov. 6	7.3	70	82	.....	.....	97.6	.....	120	16.8	4.1	4.0	.....	4.7
60	Dec. 3	7.4	90	92††	.....	.....	109	.....	124	17.6	4.4	4.0	.....	5.8

* Analyses by Dearborn Chemical Co. Ltd. and supplied by the Abitibi Paper Company Ltd.

** Iron and Aluminum as R_2O_3

*** Mix-upin samples suspected here. This analysis could be for raw water after filtering using diatomaceous earth.

† Calculated

†† Jackson Candle Units

TABLE II – (Continued)

Chemical Analyses of Surface Waters in the Hudson Bay Drainage Basin

(In parts per million)

Alkalinity			Carbonate	Bicarbonate	Sulphate	Chloride		Silica		Hardness					No.
"p"	"M"	"OH"				as	as	Total	Reactive	Non permanent	Permanent	Magnesium	Calcium	Total	
($CaCO_3$)	($CaCO_3$)	($CaCO_3$)	(CO_3)	(HCO_3)	(SO_4)	(NaCl)	(Cl)	(SiO_2)	(SiO_2)	($CaCO_3$)	($CaCO_3$)	($CaCO_3$)	($CaCO_3$)	($CaCO_3$)	
at IROQUOIS FALLS, ONTARIO (*See* also page 32)															
0	57	0	0	68	12	.....	2	32	.....	57	6	16	47	63	1
0	53	0	0	64	13	.....	5	44	.....	53	7	15	45	60	2
0	58	0	0	70	15	.....	2	42	.....	58	8	19	47	66	3
0	55	0	0	66	12	.....	3	48	.....	55	10	16	49	65	4
0	48	0	0	57	10	.....	2	22	.....	48	0	9	39	48	5
0	47	0	0	56	12	.....	2	24	.....	47	10	9	48	57	6
0	46	0	0	55	9	.....	1	25	.....	46	4	10	40	50	7
0	45	0	0	54	15	.....	1	14	.....	45	7	10	42	52	8
0	40	0	0	48	12	.....	1	35	.....	40	12	17	35	52	9
0	55	0	0	66	12	.....	2	48	.....	55	3	14	44	58	10
0	46	0	0	55	10.4	.....	3	40	.....	46	9	12	43	55	11
0	41	0	0	49	13	.....	4	24	.....	41	14	15	40	55	12
0	51	0	0	61	9	.....	2	20	.....	51	6	14	43	57	13
0	52	0	0	62	10.5	.....	2	23	.....	52	8	17	43	60	14
0	48	0	0	58	12.5	.....	4	38	.....	48	13	15	46	61	15
0	55	0	0	66	13	.....	4	26	.....	55	13	22	46	68	16
0	50	0	0	60	0	16	.....	2.7	.....	50	4	11	43	50	17
0	48	0	0	58	8.5	.....	2	9	.....	48	6	10	44	54	18
0	47	0	0	56	9	.....	4	12	.....	47	8	13	42	55	19
															20
0	51	0	0	61	13	.....	1	17	.....	51	14	21	44	65	21
0	56	0	0	67	11	.....	2	38	.....	56	9	19	46	65	22
0	53	0	0	64	13.6	.....	2	46	.....	53	14	22	45	67	23
0	49	0	0	59	13.6	.....	4	42	.....	49	15	18	46	64	24
0	50	0	0	60	13.6	6	.....	21	.....	50	13	14	49	63	25
0	53	0	0	64	10.4	8	.....	36	.....	53	8	18	43	61	26
0	53	0	0	64	12	5	.....	26	.....	53	11	18	46	64	27
0	66	0	0	79	12.6	5	.....	21	.....	66	12	18	60	78	28
0	52	0	0	62	14	6	.....	21	.....	13	52	17	48	65	29
0	34	0	0	40	11	3	.....	15.2	.....	34	10	13	31	44	30
0	34	0	0	41	10	3	.....	13.6	.....	34	10	15	29	44	31
0	43	0	0	52	14.8	1	.....	16.8	.....	43	8	16	35	51	32
0	50	0	0	60	11.8	4	.....	22.8	.....	46	11	13	44	57	33
0	50	0	0	60	13	12	.....	24	.....	50	6	21	35	56	34
0	47	0	0	56	8	5	.....	30	.....	47	9	21	35	56	35
0	54	0	0	65	12.3	1	.....	29.3	.....	54	12	22	44	66	36
															37
0	48	0	0	58	10	1	.....	16.4	.....	48	.....	9	40	57	38
0	48	0	0	58	12.2	5	.....	15.0	.....	48	.....	12	39	60	39
0	55	0	0	66	12.7	6	.....	12.8	.....	55	.....	9	40	64	40
0	43	0	0	52	9	5	.....	22.9	.....	43	.....	17	45	57	41
0	47	0	0	56	12	6	.....	15.2	.....	47	.....	12	41	59	42
0	45	0	0	54	12	6	.....	18.4	5.0	45	.....	11	38	56	43
0	45	0	0	54	13	8	.....	19.4	4.6	45	.....	15	42	58	44
															45
0	47	0	0	56	14	6	.....	34.0	4.3	47	.....	14	43	61	46
0	51	0	0	61	12	10	.....	17.3	5.4	51	.....	12	47	63	47
0	49	0	0	59	12	9	.....	40.8	4.7	49	.....	12	46	61	48
0	51	0	0	61	15	.....	1	38.2	5.0	51	11	16	46	62	49
0	55	0	0	66	11.4	.....	0.6	42.0	5.1	55	12	18	49	67	50
0	60	0	0	72	15.6	.....	1.8	40.0	4.9	60	10	20	50	70	51
0	62	0	0	74	14.3	.....	3	39.6	5.6	62	12	22	52	74	52
0	54	0	0	65	11	.....	0.6	26.0	4.9	54	12	24	42	66	53
0	51	0	0	61	9.1	.....	1.2	23	4.7	51	12	24	39	63	54
0	58	0	0	70	9	.....	1.8	17.0	4.4	58	8	22	44	66	55
0	48	0	0	57.5	8.1	.....	1.2	19	4.1	48	6	16	38	54	56
0	52	0	0	62.4	10.5	.....	0.6	18.5	4.7	52	9	15	46	61	57
0	46	0	0	55.9	14.1	.....	0.6	4.8	1.1	46	11	18	39	57	58
0	46	0	.....	56	11.6	.....	3.5	3.4	1.9	46	13	17	42	59	59
0	51	0	0.1	62	12	.....	4	16.6	3.1	51	11	18	44	62	60

TABLE II – (Continued)

Chemical Analyses of Surface Waters in the Hudson Bay Drainage Basin

(In parts per million)

No.	Date of Collection	pH	Colour	Turbidity	Suspended solids	Dissolved solids: Total dissolved mineral matter	Dissolved solids: Total organic and volatile matter	Hardness: as $CaCO_3$	Hardness: non-carbonate as $CaCO_3$	Iron (Fe)	Manganese (Mn)	Fluoride (F)	Nitrate: as NO_3	Nitrate: as N
1	[illegible] 1949	7.4	50	50 ††			122		143	18.9	1.0	1.0		5.6
2	[illegible] 8	7.4	50	50			128.2		40	19.2	0.0	1.0		2.1
3	[illegible] 8	7.9	35	30			151.0		100	26.4	0.1	1.0		2.4
4	[illegible] 3	7.4	65	65			139.8		102	19.2	0.1	1.0		0.9
5	May 15	7.0	55	55			86.2		100	14.5	0.1	1.0		1.5
6	[illegible] 1	7.1	30	30			100.2		121	17.1	0.0	1.0		0.5
7	[illegible] 28	6.9	65	65			95.4		123	15.0	0.0	2.0		0.5
8	[illegible] 30	7.7	35	35			497.0		117	25.2	0.0	2.0		0.5
9	[illegible] 17	7.0	60	60			107.4		127	17.1	0.0	1.0		0.5
10	[illegible] 21	7.2	70	70			111.4		134	20.1	0.0	1.0		0.5
11	[illegible] 11	7.2	50	60			112.2		138	18.1	0.0	1.0		0.5
12	[illegible] 5	7.2	55	60	2.8		108.0		130	20.1	0.0	1.0		0.5

* Analyses by Dearborn Chemical Co. Ltd. and supplied by the Abitibi Paper Company Ltd.
†† Jackson Candle Units

TABLE II – (Continued)

Chemical Analyses of Surface Waters in the Hudson Bay Drainage Basin

(In parts per million)

Alkalinity						Chloride		Silica		Hardness					No.
"P"	"M"	"OH"	Carbonate	Bicarbonate	Sulphate	as	as	Total	Reactive	Non permanent	Permanent	Magnesium	Calcium	Total	
($CaCO_3$)	($CaCO_3$)	($CaCO_3$)	(CO_3)	(HCO_3)	(SO_4)	(NaCl)	(Cl)	(SiO_2)	(SiO_2)	($CaCO_3$)	($CaCO_3$)	($CaCO_3$)	($CaCO_3$)	($CaCO_3$)	
at IROQUOIS FALLS, ONTARIO (*See* also page 32)															
0	58	0	0.1	71	13.2	.....	3	15.7	3.5	58	8	19	47	66	1
0	54	0	0.1	65.5	14.7	.....	4	17.3	3.7	54	13	19	48	67	2
0	76	0	0.4	92	13.5	.....	5.0	22.0	4.5	76	9	19	66	85	3
0	56	0	0.2	68	16.6	.....	4.0	23.8	5.4	56	14	21	49	70	4
0	39	0	0	47.5	6.1	.....	5.5	18.4	3.9	39	10	14	35	49	5
0	51	0	0	62.2	10.3	.....	4.5	18.2	4.3	51	9	16	44	60	6
0	46	0	0	56.0	7.9	.....	4.0	42.0	3.3	46	7	15	38	53	7
0	54	0	0	65.8	5.8	.....	5.0	30.4	3.0	54	0	16	38	54	8
0	51	0	0	62.0	12.0	.....	3.0	16.1	2.6	51	9	17	43	60	9
0	55	0	0.1	67	10.5	.....	5.0	30.2	4.4	55	11	18	48	66	10
0	52	0	0.1	63.3	10.5	.....	5.0	25.2	4.3	52	13	17	48	65	11
0	50	0	<0.1	61	11.9	.....	4.0	31.2	4.3	50	15	19	46	65	12

TABLE II – (Continued)

Chemical Analyses of Surface Waters in the Labrador Drainage Basin

(In parts per million)

	Date of collection	Storage period (Days)	Stream discharge (Second-feet) On sampling date	Stream discharge (Second-feet) Monthly mean	Water temperature (°F.)	Oxygen consumed by $KMnO_4$	Carbon dioxide (calculated) (CO_2)	pH	Colour (Hazen) (Units)	Turbidity (Units)	Suspended matter Dried at 105°C.	Suspended matter Ignited at 550°C.	Residue on evaporation dried at 105°C. (Dissolved solids) P.P.M.	Residue on evaporation (Dissolved solids) Tons per acre-foot	Residue on evaporation (Dissolved solids) Tons per day	Loss on ignition at 550°C.	Specific conductance $K \times 10^6$ at 25°C.	Calcium (Ca)
	STATION NO. 1B – PAYNE RIVER																	
1	Sept. [illegible]	[illegible]	[illegible]		[illegible]	[illegible]	1	[illegible]	[illegible]	[illegible]							[illegible]	[illegible]
	STATION NO. 2B – LEAF RIVER																	
2	May 31/60	35:38	110,000	......	34	......	2	6.5	15	3	......	......	......	......			[illegible]	[illegible]
3	Sept. [illegible]	91:116	36,600	......	[illegible]	4.4	1	[illegible]	20	[illegible]							[illegible]	[illegible]
	STATION NO. 3B – [illegible] RIVER*																	
4	Aug. [illegible]	[illegible]	Low tide		55	4.7	3	6.8	10	1			[illegible]			[illegible]	[illegible]	[illegible]
5	Aug. 15	[illegible]	High tide		55	5.3	2	6.9	15	0.4			[illegible]			[illegible]	[illegible]	[illegible]
6	Sept. [illegible]	[illegible]	Low tide		43	4.5	2	[illegible]	15	3			[illegible]			[illegible]	[illegible]	[illegible]
7	Sept. [illegible]	[illegible]	High tide		42	5.3	2	[illegible]	15	[illegible]			36.8			11.6	[illegible]	[illegible]
8	Dec. [illegible]	[illegible]	Low tide		35	6.3	5	[illegible]	10	0.8							[illegible]	[illegible]
9	Dec. [illegible]	[illegible]	High tide		35	5.7	5	6.7	10	0.8							[illegible]	[illegible]
10	Dec. 15	[illegible]	Low tide				3	6.9	10	0.4							[illegible]	[illegible]
	STATION NO. 4B – LARCH RIVER																	
11	May [illegible]	8:11	[illegible]		33	......	4	[illegible]	25	10							[illegible]	[illegible]
12	Sept. [illegible]	[illegible]	[illegible]		50	......	2	6.7	30	0.4							[illegible]	[illegible]
	STATION NO. 5B – KANIAPISKAU RIVER																	
13	Aug. 20/60	143:143		......	......	5.8	2	6.3	25	2	......	......					[illegible]	[illegible]
14	Sept. [illegible]	[illegible]	75,000	......		6.1	1	6.8	35	0.4	......						[illegible]	[illegible]
	STATION NO. 6B – SWAMPY BAY RIVER (LAC LEMOYNE)																	
15	Sept. [illegible]	[illegible]	13,200	......	50	5.3	5	6.9	25	0	......						[illegible]	[illegible]
	STATION NO. 7B – SQUAW LAKE*																	
16			......	......	......	......	3	7.4	......	......	......	......	......	......			[illegible]	[illegible]
	STATION NO. 8B – WHALE RIVER																	
17	June 3/60	31:34	85,000	......	41	......	4	6.5	25	2	......	......	......	......	......	......	[illegible]	[illegible]
	STATION NO. 9B – GEORGE RIVER																	
18	Sept. 13/59	53:64	Low tide	......	46	......	8	7.2	5	0	......	......	......	......	......	......	29,582	229
	STATION NO. 10B – KAPITOUKTALLIK CREEK																	
19	Aug. 31/60	28:29	......	......	......	5.3	2	6.6	15	0.4	......	......	......	......	......	......	27.2	1.5
	STATION NO. 11B – IGLOUTALLIK CREEK (GEORGE RIVER DELTA)																	
20	Aug. 29/60	30:31	......	......	......	4.4	2	6.3	10	0	......	......	......	......	......	......	[illegible]	[illegible]

* Station 3B: Sampled at wharf

* Station 7B: Sampled at south end

TABLE II– (Continued)

Chemical Analyses of Surface Waters in the Labrador Drainage Basin

(In parts per million)

Magnesium (Mg)	Iron (Fe) Total	Iron (Fe) Dissolved	Manganese (Mn)	Aluminum (Al)	Copper (Cu)	Zinc (Zn)	Alkalis Sodium (Na)	Alkalis Potassium (K)	Ammonia (NH_3)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulphate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Silica (colorimetric) (SiO_2)	Phosphate (PO_4)	Boron (B)	Hardness as $CaCO_3$ Non-carbonate	Hardness as $CaCO_3$ Total	Sum of constituents	Per cent sodium	Saturation index	Stability index	No.
near ISLAND RAPIDS, at 60°03' 15" N – 71°13' 30" W – QUEBEC																									
0.4	0.03	0.0	0.0	0.13	0.0	.....	0.5	0.3	0.0	0.0	2.3	2.0	1.3	0.0	0.0	0.6	.....	.....	0.9	2.8	6.8	21	−4.5	16	1
at 58°38' N – 70°25' W – QUEBEC																									
0.2	0.27	0.0	0.0	0.0	0.0	0.0	0.6	0.3	0.0	0.0	4.6	0.7	1.0	0.0	0.1	1.7	0.03	.....	0.0	3.6	8.0	25	−4.2	18	2
0.7	0.06	0.01	0.0	0.10	0.0	0.0	0.8	0.3	0.0	0.0	3.9	2.2	1.5	0.0	0.0	1.6	0.00	.....	1.4	4.6	9.8	24	−4.2	15	3
at FORT CHIMO at 58°09' N – 68°19' W – QUEBEC																									
0.9	0.05	0.01	0.0	0.05	0.0	0.0	0.7	0.4	0.0	0.0	9.8	2.0	0.7	0.0	0.2	1.4	.....	.....	1.7	9.7	13.6	13	−3.1	13	4
0.8	0.07	0.00	0.01	0.01	0.0	0.0	0.7	0.4	0.0	0.0	10.1	1.2	0.9	0.0	0.2	1.4	.....	.....	1.2	9.5	13.1	13	−3.0	13	5
1.0	0.12	0.02	0.0	0.0	0.0	0.0	1.0	0.1	0.3	0.0	12.7	2.8	0.9	0.0	0.2	2.0	.....	.....	0.9	11.3	17.2	16	−2.7	13	6
0.9	0.04	0.02	0.0	0.0	0.0	0.0	1.0	0.4	0.3	0.0	10.5	2.5	1.1	0.0	0.4	2.1	.....	.....	1.6	10.2	16.2	17	−3.1	13	7
1.3	0.07	0.00	0.0	0.03	0.0	0.0	0.9	0.5	0.0	0.0	12.9	4.0	1.6	0.0	0.1	2.5	0.01	.....	2.7	13.3	20.5	12	−3.2	13	8
1.5	0.06	0.02	0.0	Trace	0.0	0.0	1.6	0.5	0.0	0.0	15.0	4.3	1.7	0.0	0.1	2.3	0.01	.....	1.6	13.9	22.5	19	−3.1	13	9
1.4	0.07	0.00	0.0	0.0	0.0	0.0	1.5	0.5	0.0	0.0	14.7	4.5	1.6	0.0	0.3	3.0	0.00	.....	3.4	15.5	24.0	17	−2.8	13	10
at GOSSEN HILL at 57°33' N – 70°08' W – QUEBEC																									
3.8	1.1	0.00	0.0	0.06	0.0	0.0	1.4	1.0	0.0	0.0	22.4	0.9	1.8	0.0	0.4	2.6	0.01	.....	0.0	16.3	23.5	14	−3.2	13	11
1.1	0.09	0.00	0.0	0.0	0.0	0.0	0.7	0.2	0.3	0.0	6.3	2.3	0.6	0.0	0.1	2.7	0.00	.....	1.3	6.5	11.6	18	−3.9	15	12
at 55°45' N – 68°15' W – QUEBEC																									
0.5	0.10	0.00	Trace	0.07	0.0	0.0	0.6	0.3	0.3	0.0	2.3	2.1	0.5	0.0	0.1	1.6	0.06	.....	1.6	3.5	7.4	26	−4.6	16	13
0.8	0.13	Trace	0.0	0.06	0.0	0.0	1.2	0.3	0.1	0.0	4.8	2.7	0.5	0.0	0.0	3.3	0.00	.....	0.8	4.7	11.7	33	−3.9	15	14
at FORT McKENZIE at 56°50' N – 68°57' W – QUEBEC																									
2.9	0.03	0.00	0.0	0.08	0.0	0.0	0.6	0.4	0.0	0.0	25.6	5.4	0.5	0.0	0.0	2.0	0.0	.....	5.3	26.3	30.2	4.6	−2.4	12	15
at 54°50' N – 66°47' W – near SCHEFFERVILLE, QUEBEC																									
5.4	0.03	0.00	0.0	.....	0.0	0.0	0.9	0.9	.....	0.0	46.3	11.2	0.5	0.0	0.0	3.5	.....	.....	6.7	44.7	54.1	4.1	−1.5	10	16
at 57°47' N – 67°30' W – QUEBEC																									
0.7	0.28	0.02	0.0	0.02	0.0	0.0	0.5	0.5	0.1	0.0	7.1	0.9	0.6	0.0	0.1	2.4	0.02	.....	0.8	6.6	10.7	13	−3.9	14	17
at KAGNERLOUALOUDJOUARK MOUTH, QUEBEC																									
733	.....	Trace	0.01	.....	0.0	0.0	5,750	210	.....	0.0	79.8	1,520	10,600	1.4	0.0	0.8	Trace	.....	3,518	3,583	19,083	76	−0.1	7.5	18
(GEORGE RIVER DELTA) QUEBEC																									
0.5	0.05	Trace	Trace	0.30	0.0	0.0	2.1	0.4	.....	0.0	5.1	3.6	4.2	0.0	0.0	1.6	.....	.....	1.7	5.9	16.7	36	−4.1	15	19
QUEBEC																									
0.3	0.01	Trace	0.0††	0.08	0.0	0.0	0.9	0.2	.....	0.0	2.0	1.7	2.2	0.0	0.0	1.3	.....	.....	2.1	3.7	8.2	31	−4.8	16	20

†† Dissolved

TABLE II – (Continued)

Chemical Analyses of Surface Waters in the Labrador Drainage Basin

(In parts per million)

No.	Date of collection	[illegible]	Stream discharge (Second-feet): On sampling date	Stream discharge (Second-feet): Monthly mean	Water temperature (°F.)	Oxygen consumed by $KMnO_4$	Carbon dioxide (calculated) ([illegible])	pH	[illegible]	Turbidity	Suspended matter: [illegible]	Suspended matter: [illegible]	Residue on evaporation (Dissolved solids): [illegible]	Residue on evaporation (Dissolved solids): [illegible]	Residue on evaporation (Dissolved solids): [illegible]	[illegible]	[illegible]	[illegible]
STATION NO. [illegible] – [illegible]																		
1	[illegible]	[illegible]†			...	...	[illegible]	[illegible]	[illegible]	[illegible]		...	...	...	...		[illegible]	

† Discharge records at outlet of Flour Lake, 53°44' 42" N – 64°38' 24" W – drainage area 13,000 square miles.

No.	Date of collection	[illegible]	On sampling date	Monthly mean	Water temperature	Oxygen consumed	Carbon dioxide	pH	[illegible]	Turbidity	Suspended: [illegible]	Suspended: [illegible]	Residue: [illegible]	Residue: [illegible]	Residue: [illegible]	[illegible]	[illegible]	[illegible]
STATION NO. 13B – UNKNOWN RIVER (BAIKIE LAKE)																		
2	[illegible]	[illegible]	[illegible]†	...	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]			...				[illegible]	[illegible]
STATION NO. 14B – FLOUR RIVER (LAKE)																		
3	June [illegible]	[illegible]					[illegible]	[illegible]	[illegible]	[illegible]							[illegible]	[illegible]
STATION NO. 15B – GABBRO LAKE																		
4	June [illegible]	[illegible]					[illegible]	[illegible]	15	[illegible]							[illegible]	[illegible]
STATION NO. 16B – SIMS RIVER																		
5	June 8/60	[illegible]					[illegible]	[illegible]	15	[illegible]							[illegible]	[illegible]
STATION NO. [illegible] – [illegible] LAKE*																		
6	Autumn [illegible]						[illegible]	[illegible]									[illegible]	[illegible]

* [illegible]

No.	Date of collection	[illegible]	On sampling date	Monthly mean	Water temperature	Oxygen consumed	Carbon dioxide	pH	[illegible]	Turbidity	Suspended: [illegible]	Suspended: [illegible]	Residue: [illegible]	Residue: [illegible]	Residue: [illegible]	[illegible]	[illegible]	[illegible]
STATION NO. [illegible] – STREAM near [illegible]																		
7	Autumn [illegible]						2	[illegible]									[illegible]	[illegible]

Nickel 0.0 ppm, cobalt 0.0 ppm

No.	Date of collection	[illegible]	On sampling date	Monthly mean	Water temperature	Oxygen consumed	Carbon dioxide	pH	[illegible]	Turbidity	Suspended: [illegible]	Suspended: [illegible]	Residue: [illegible]	Residue: [illegible]	Residue: [illegible]	[illegible]	[illegible]	[illegible]
STATION NO. [illegible] – STREAM [illegible]																		
8	Autumn [illegible]		...	...	...	...	2	7.8	...	...	...	...	...				[illegible]	[illegible]

Nickel 0.0 ppm, cobalt 0.0 ppm

No.	Date of collection	[illegible]	On sampling date	Monthly mean	Water temperature	Oxygen consumed	Carbon dioxide	pH	[illegible]	Turbidity	Suspended: [illegible]	Suspended: [illegible]	Residue: [illegible]	Residue: [illegible]	Residue: [illegible]	[illegible]	[illegible]	[illegible]
STATION NO. [illegible] – LITTLE [illegible] LAKE																		
9	Aug. 30/60	[illegible]	...	...	52	[illegible]	5	6.8	35	5			...	...		...	[illegible]	[illegible]

TABLE II – (Continued)

Chemical Analyses of Surface Waters in the Labrador Drainage Basin

(In parts per million)

Magnesium (Mg)	Iron (Fe) Total	Iron (Fe) Dissolved	Manganese (Mn)	Aluminum (Al)	Copper (Cu)	Zinc (Zn)	Alkalis Sodium (Na)	Alkalis Potassium (K)	Ammonia (NH_3)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulphate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Silica (colorimetric) (SiO_2)	Phosphate (PO_4)	Boron (B)	Hardness as $CaCO_3$ Non-carbonate	Hardness as $CaCO_3$ Total	Sum of constituents	Per cent sodium	Saturation index	Stability index	No.
at GRAND FALLS, LABRADOR																									
.....	0.09	0.02	0.0††	0.0	0.0	0.0	0.5	0.3	0.0	0.0	11.1	1.0	0.5	0.0	0.2	2.3	.....	.....	1.6	10.7	.....	9.0	.....	.....	1
††Dissolved																									
at THOMAS FALLS, LABRADOR																									
1.5	0.11	Trace	0.0††	0.01	0.0	0.03	1.0	0.7	0.1	0.0	12.4	2.1	1.0	0.05	0.1	3.1	0.00	.....	0.8	11.0	17.8	15	-3.3	13	2
††Dissolved																									
about 53°40' N – 64°45' W																									
0.6	0.22	0.05	0.0††	0.0	0.0	0.0	0.4	0.4	0.0	0.0	7.4	0.8	0.4	0.0	0.2	2.7	.....	.....	0.8	6.9	11.1	10	-3.1	13	3
††Dissolved																									
about 53°44' 30" N – 65°12' W – LABRADOR																									
0.9	0.05	0.0	0.0	0.0	0.0	0.0	0.5	0.3	0.0	0.0	14.7	1.4	0.6	0.0	0.2	2.0	.....	.....	0.0	11.6	16.3	8.4	-2.4	12	4
about 53°48' N – 65°33' W – LABRADOR																									
0.8	0.04	Trace	0.0††	0.0	0.0	0.0	0.5	0.2	0.0	0.0	13.3	1.2	0.4	0.0	0.2	2.3	.....	.....	0.0	10.9	15.2	9.0	-2.7	13	5
††Dissolved																									
near SCHEFFERVILLE, at 54°45' N – 66°45' 30" W – QUEBEC																									
5.0	0.11	0.0	0.0††	.....	0.0	0.0	0.4	3.0	.....	0.0	49.5	4.0	0.8	0.0	0.0	3.7	.....	.....	0.0	39.7	48.8	2.0	-1.5	10	6
††Dissolved																									
about 54°46' N – 66°49' W – QUEBEC																									
3.1	0.02	0.0	0.0††	.....	0.0	0.0	0.2	0.3	.....	0.0	26.2	3.7	0.3	0.0	0.1	4.8	0.03	.....	2.5	24.0	29.8	1.8	-2.1	12	7
††Dissolved																									
about 40°42' N – 66°45' W – QUEBEC																									
8.8	0.04	0.0	0.0††	.....	0.0	0.0	0.2	0.2	.....	0.0	85.5	3.1	0.2	0.0	0.0	3.5	0.02	.....	2.0	72.1	72.6	0.3	-0.6	9.0	8
††Dissolved																									
at 52°56' N – 66°54' W – LABRADOR																									
1.3	0.18	0.04	0.0††	0.03	0.0	0.0	0.8	0.9	.....	0.0	21.2	1.4	1.0	0.0	0.2	2.8	.....	.....	0.0	12.5	23.3	8.9	-2.7	12	9
††Dissolved																									

TABLE II – (Continued)

Chemical Analyses of Surface Waters in the Arctic Drainage Basin

(In parts per million)

No.	Date of collection	Storage period (Days)	Stream discharge (Second-feet): On sampling date	Stream discharge (Second-feet): Monthly mean	Water temperature (°F.)	Oxygen consumed by $KMnO_4$	Carbon dioxide (calculated) (CO_2)	pH	Silica (SiO_2)	Iron (Fe)	Suspended matter: Dissolved at 105°C.	Suspended matter: Ignited at 1000°C.	Residue on evaporation dried at 105°C. (Dissolved solids): P.P.M.	Residue on evaporation dried at 105°C. (Dissolved solids): Tons per acre-foot	Residue on evaporation dried at 105°C. (Dissolved solids): Tons per square mile	Loss on ignition at 1000°C.	Hardness as $CaCO_3$	Non-carbonate hardness as $CaCO_3$
	Superglacial water at Glacier Snout																	
1	July 23/64	120:173			32		2	5.5	5								4.4	0.4
2	July 23	120:173			32		2	6.4	25								12.9	1.2
3	June 26/65	156:158			32			5.2	0								15.2	1.4
	Lewis North Lateral Stream																	
4	July 23/64	120:173			33		2	6.1	5								16.4	0.7
5	June 27/65	155:157			34		2	6.8	80								34.0	4.5
6	July 23/65	129:131			33		3	6.3	0								23.4	0.8
	Lewis Glacier Stream Water																	
7	June 20/64	151:204			33		3	6.6	10								195	12.9
8	June 24/64	147:200			33		3	6.5	15								145	9.4
9	June 28	145:198			35		2	6.7	10								100	6.6
10	July 2	141:194			34		2	6.4	10								45.8	3.2
11	July 6	137:190			37		3	6.2	10								25.3	1.3
12	July 10	133:186			33		3	5.8	10								12.9	0.7
13	July 14	129:182			32		4	5.3	5								9.0	0.5
14	July 19	124:177			34		2	6.1	10								27.7	1.2
15	July 22	121:174			34		2	5.7	10								9.1	0.6
16	July 27	116:169			33		1	5.9	10								9.9	0.6
17	Aug. 1	111:164			34		3	5.7	15								17.5	0.7
18	Aug. 4	108:161			36		5	5.8	10								68.3	4.1
19	Aug. 8	104:157			37		2	6.7	15								64.5	2.5
20	Aug. 12	100:153			33		3	6.4	15								26.6	1.2

* Sample filtered when taken

STATION NO. 2A – LEWIS GLACIER

21	June 27 65a	155:157			40		3	6.7	0								79.8	5.1
22	June 27b	155:157			36		3	6.6	0								80.3	5.2

[a] Sampled at 1900 A.D. Moraine
[b] Sampled at head of braided beach.

STATION NO. 3A – KOUKDJUAK RIVER

23	Aug. 64				16			7.4	10	0.5							61.6	10.6

STATION NO. 4A – CREEK

24	Sept. 23 57	112:116			3	1	7.6	15	1			50.4			25.2	51.8	7.3

STATION NO. 5A – LAKE*

25	July 5 65	10 14				1	5.8	15	1								45.7	4.4

* a small unnamed lake about 10 miles north of Lake Harbour.

STATION NO. 6A – LAKE*

26	Aug. 15 64	90:103			37		10	4.8	5	0.5							160	17.9

* a small unnamed lake

STATION NO. 7A – TREE RIVER

27	Aug. 14 65	60:62				1.4	3	7.3	15	2							67.3	6.9

TABLE II – (Continued)

Chemical Analyses of Surface Waters in the Arctic Drainage Basin

(In parts per million)

Magnesium (Mg)	Iron (Fe) Total	Iron (Fe) Dissolved	Manganese (Mn)	Aluminum (Al)	Copper (Cu)	Zinc (Zn)	Alkalis Sodium (Na)	Alkalis Potassium (K)	Ammonia (NH_3)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulphate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Silica (colorimetric) (SiO_2)	Phosphate (PO_4)	Boron (B)	Hardness as $CaCO_3$ Non-carbonate	Hardness as $CaCO_3$ Total	Sum of constituents	Per cent sodium	Saturation index	Stability index	No.
at 70°26' N - 74°45' W, BAFFIN ISLAND, N.W.T.																									
0.0							0.1	0.0		0.0	0.5	0.7	0.3		0.1	0.1			0.6	1.0	1.9	17	-5.8	17	1
0.2							1.0	0.6		0.0	2.4	3.1	1.9		1.1	0.6			2.0	4.0	11	32	-4.5	15	2
0.2							0.9	0.1		0.0	0.1	1.7	2.7	0.01	0.3	0.1			4.4	4.5	7.5	30			3
0.2							1.8	0.2		0.0	1.6	2.4	2.8		0.1	0.2			1.3	2.6	9.2	58	-5.1	16	4
0.1							3.8	0.7		0.0	8.3	3.8	3.2	0.04	0.6	1.0			0.0	6.7	20	52	-3.5	14	5
0.4							2.9	0.4		0.0	3.0	1.0	4.8	0.01	0.3	0.2			1.0	3.5	12.3	61			6
3.7							13.5	1.3		0.0	7.2	7.0	45.8		0.4	1.6			41.4	47.3	89.7	38	-2.9	12	7
2.6							10.8	1.0		0.0	5.4	5.0	34.0		0.3	1.2			29.9	34.3	66.9	40	-3.2	13	8
1.8							8.1	0.9		0.0	5.7	4.0	22.7		0.3	1.2			19.0	23.7	48.4	41	-3.2	13	9
0.8							3.6	0.6		0.0	3.4	2.4	8.8		0.3	0.9			8.3	11.1	22.3	40	-4.0	14	10
0.4							2.3	0.5		0.0	2.9	3.5	4.1		0.2	0.6			2.5	4.9	14.3	47	-4.6	15	11
0.2							1.1	0.3		0.0	1.1	1.7	1.7		0.5	0.2			1.6	2.5	6.9	45	-5.5	17	12
0.04							0.6	0.2		0.0	0.0	0.7	1.0		0.3	0.1			1.4	1.4	3.4	44	-6.0	17	13
0.4							2.8	0.4		0.0	1.6	2.1	4.9		0.0	0.3			3.5	4.8	12.9	54	-5.0	16	14
0.1							0.8	0.2		0.0	0.6	0.8	1.3		1.3	0.2			1.5	2.0	5.6	44	-5.6	17	15
0.2							0.9	0.2		0.0	0.5	1.6	1.5		0.0	0.2			1.8	2.2	5.4	44	-5.4	17	16
0.3							1.7	0.2		0.0	1.0	2.6	2.6		0.0	0.3			2.1	2.9	8.9	54	-5.6	17	17
1.2							5.7	0.8		0.0	2.1	3.6	16.2		0.1	0.7			13.4	15.1	33.4	44	-4.7	15	18
1.0							7.5	0.8		0.0	6.9	4.4	11.2		0.0	1.0			4.7	10.4	31.8	59	-3.5	14	19
0.3							3.0	0.4		0.0	4.5	2.9	3.1		0.4	0.6			0.4	4.1	14.1	59	-4.3	15	20
at 70°25' N - 74°48' W, BAFFIN ISLAND, N.W.T.																									
3.7							5.8	0.8		0.0	7.8	4.2	16	0.04	0.5	1.1			11.5	17.9	41.0	40	-3.3	13	21
1.7							8.9	0.7		0.0	8.0	4.4	22	0.04	0.5	1.1			15.5	22.1	49.4	46	-3.3	13	22
at 66°46' N – 72°(approx) W, BAFFIN ISLAND																									
0.7	<0.01	0.00	0.005	0.0			0.7	0.3	2.5	0.0	22.3	1.6	1.3	0.00	0.5	0.1			10.9	29.2	26.8	4.8	-1.7	11	23
near FROBISHER BAY, BAFFIN ISLAND, N.W.T.																									
1.2		<0.01	0.0	0.06	<0.01	0.00	0.8	0.3	0.0	0.0	22.7	4.9	1.7	0.0	0.0	3.3			4.6	23.2	30.7	6.8	-1.6	11	24
north of LAKE HARBOUR, BAFFIN ISLAND, N.W.T.																									
1.3	0.07		0.01				1.1	0.2		0.0	0.1	15.0	0.8	0.04	0.0	3.8			16.2	16.3	26.8	13	-4.9	16	25
at 67°05' N - 84°42' W, north of LYON INLET, MELVILLE PENINSULA, N.W.T.																									
4.2					0.024	0.45	1.5	1.1		0.0	0.0	64.4	1.4		0.2	3.9			61.9	61.9	94.6	4.8	-5.4	16	26
at 67°43' N - 111°55' W, near ARCTIC COAST, DISTRICT OF MACKENZI E, N.W.T.																									
3.8	0.03	<0.01	0.02	0.04	0.008	0.022	0.7	0.3	0.1	0.0	36.3	1.9	1.4	0.02	0.1	1.0	<0.1		3.0	32.8	34.0	4.3	-1.7	11	27

TABLE II – (Continued)

Chemical Analyses of Surface Waters in the Arctic Drainage Basin

(In parts per million)

No.	Date of collection	Discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Suspended matter: Dried at 105°C.	Suspended matter: Ignited at 550° C.	Residue on evaporation dried at 105°C. (Dissolved solids)	Hardness as $CaCO_3$	Noncarbonate hardness as $CaCO_3$	Specific conductance (micromhos at 25°C.)	pH
										Carbon dioxide (CO_2) (calculated)											
STATION NO. 9 – [illegible] RIVER																					
1	Sept. 24 '62	230:241				41		3		5		2					83.0				
2	Dec. 15	145:148				37		3		7.8	10	2					77.0				
3	Mar. 16 '63	215:240				33		4		7.1	10	2					70.0				
4	June 25	286:340				40		5		7.6	20	15			.4	5.2	94.8				
5	Sept. 25 '63	141:?						3		7.4	25	3									
STATION NO. 9A – [illegible] CREEK																					
6	Sept. 19 '62	86:92				42		5		7.8	25									209	22.5
7	Sept. '63	71:84						2		7.6	25				0.8					84.0	9.5
STATION NO. 10A – ZETA LAKE*																					
8	Aug. 20 '62	190:197						2		7.9	10	0					158				
* Name not official																					
STATION NO. 11A – [illegible] LAKE*																					
9	Aug. 21/62	196:205						2		8.0	10	2					98.8				
*Name officially approved January 6, 1966.																					
STATION NO. 12A – [illegible] LAKE																					
10	Sept. 4 '62	182:191						1		8.2	10	0					117				
STATION NO. 13A – SURREY LAKE*																					
11	Sept. 2 '62	184:193						2		8.0	5	3					100				
* Name officially approved January 6, 1966.																					
STATION NO. 14A – [illegible] LAKE*																					
12	Aug. 21 '62	199:205						1		8.1	10	0.6					94.4				
* Name not official																					
STATION NO. 15A – FERGUSON [illegible]																					
13	Aug. 5/63	84:91						4		7.6	0									234	8.8
14	Sept. 4	51:54				41		3		7.7										282	[illegible]
STATION NO. 16A – KEYHOLE [illegible]*																					
15	July 8/63	112:119						3		7.5	5									204	[illegible]
16	July 31	89:96						5		7.4	10									240	[illegible]
17	Sept. 11	47:54						6		7.3	10									259	[illegible]
* Name officially approved January 6, 1966.																					

TABLE II – (Continued)

Chemical Analyses of Surface Waters in the Arctic Drainage Basin

(In parts per million)

Magnesium (Mg)	Iron (Fe) Total	Iron (Fe) Dissolved	Manganese (Mn)	Aluminum (Al)	Copper (Cu)	Zinc (Zn)	Alkalis Sodium (Na)	Alkalis Potassium (K)	Ammonia (NH_3)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulphate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Silica (colorimetric) (SiO_2)	Phosphate (PO_4)	Boron (B)	Hardness as $CaCO_3$ Non-carbonate	Hardness as $CaCO_3$ Total	Sum of constituents	Per cent sodium	Saturation index	Stability index	No.
near COPPERMINE SETTLEMENT, DISTRICT OF MACKENZIE, N.W.T.																									
2.1	.....	0.03	.....	.....	.....	.....	3.5	0.5	.....	0.0	29.3	4.0	6.2	....	0.1	2.2	.....	....	1.8	25.9	40.0	22	−1.5	11	1
2.7	.....	0.18	.....	.....	.....	.....	2.0	1.4	.....	0.00	22.2	4.3	2.9	.....	.....	3.1	.....	....	9.6	24.7	33.6	14	−2.1	12	2
3.4	.....	0.18	.....	.....	.....	.....	2.0	1.4	.....	0.0	19.3	7.4	1.4	.....	.....	6.9	.....	....	11.6	27.4	37.0	13	−2.3	12	3
4.0	0.52	0.06	.....	.....	.....	.....	2.7	0.9	.....	0.0	45.1	5.3	1.3	....	0.1	3.0	.....	....	0.0	35.8	47.4	14	−1.3	10	4
4.0	0.08	0.00	0.00	0.03	0.03	0.00	0.7	0.4	0.4	0.0	47.2	2.7	0.7	0.0	0.0	1.4	.....	....	0.3	39.0	42.1	3.7	−1.5	10	5
near COPPERMINE SETTLEMENT, DISTRICT OF MACKENZIE, N.W.T.																									
10.2	0.28	0.00	0.00	.....	.....	.....	5.5	0.6	0.5	0.0	115	5.9	8.2	0.0	0.0	4.7	.....	....	4.2	98.2	114	11	−0.5	8.6	6
4.5	0.11	0.00	0.00	Trace	0.01	0.00	0.5	0.4	0.4	0.0	51.6	2.7	1.0	0.0	0.0	1.7	.....	....	0.1	42.4	45.7	2.5	−1.2	10	7
at 71°00' 05" N - 106°38' 05" W, VICTORIA ISLAND, N.W.T.																									
0.00	0.00	0.00	0.00	0.00	.....	.....	0.9	0.3	.....	0.0	86.3	1.0	2.7	0.03	0.3	0.5	.....	....	2.1	72.9	71.3	2.6	−0.5	8.9	8
at 70°45' 06" N - 108° 33' 05" W, VICTORIA ISLAND, N.W.T.																									
9.5	0.08	0.00	0.00	0.00	.....	.....	0.6	0.3	.....	0.0	86.3	1.4	1.7	0.01	0.3	0.3	.....	....	2.3	73.1	70.2	1.7	−0.4	8.8	9
70°02' N - 107°15" W, VICTORIA ISLAND, N.W.T.																									
13.2	Trace	0.00	0.00	0.00	.....	.....	1.9	0.6	.....	0.0	118	1.5	4.7	0.03	0.2	1.2	.....	....	2.7	99.8	99.8	3.9	0.0	8.2	10
at 69°42' N - 107°17' W, VICTORIA ISLAND, N.W.T.																									
11.7	0.20	<0.01	0.00	0.00	.....	.....	2.0	0.5	.....	0.0	98.4	3.4	4.5	0.01	0.4	0.4	.....	....	4.2	84.9	86.0	4.8	−0.3	8.6	11
at 69°48' N - 104°35' W, VICTORIA ISLAND, N.W.T.																									
10.4	0.04	0.00	0.00	0.00	.....	.....	1.5	0.4	.....	0.0	90.6	1.3	4.0	0.03	0.3	1.0	0.00	....	4.2	78.5	77.8	4.0	−0.3	8.7	12
at 69°20' 45" N - 106°15' 00" W, VICTORIA ISLAND, N.W.T.																									
18.1	.....	<0.01	0.00	.....	.....	.....	6.0	0.8	.....	0.0	109	3.6	11.0	0.09	0.3	1.1	.....	....	6.8	96.4	104	12	−1.0	9.6	13
10.1	.....	.....	.....	.....	.....	.....	5.0	1.0	.....	0.0	92.3	3.2	9.7	.....	0.1	.....	<0.1	....	5.5	81.2	90.4	12	−0.7	9.1	14
at 69°22' 30" N - 106°15' 15" W																									
10.4	.....	0.01	0.00	.....	.....	.....	12.0	1.0	.....	0.0	69.0	3.1	26.3	0.08	0.3	0.5	.....	....	11.6	68.2	97.7	27	−1.1	9.7	15
11.4	.....	0.01	0.00	.....	.....	.....	12.5	1.2	.....	0.0	74.2	3.7	27.7	0.07	0.3	0.3	.....	....	13.3	74.2	105	26	−1.2	9.8	16
12.8	.....	0.01	0.00	.....	.....	.....	14.2	1.2	.....	0.0	79.2	3.7	31.5	0.09	0.2	0.1	.....	....	16.0	81.0	114	27	−1.3	9.9	17

TABLE II – (Continued)

Chemical Analyses of Surface Waters in the Arctic Drainage Basin

(In parts per million)

No.	Date of collection	Storage period (Days)	Stream discharge (Second-feet): Un sampling date	Stream discharge (Second-feet): Monthly mean	Water temperature (°C.)	Oxygen consumed by KMnO4	Carbon dioxide (calculated) (CO_2)	pH	Colour (Hazen) (Units)	Turbidity (Units)	Suspended matter: Loss at 105°C.	Suspended matter: Ignited at 550°C.	Residue on evaporation dried at 105°C. (Dissolved solids): P.P.M.	Residue on evaporation dried at 105°C. (Dissolved solids): Tons per acre-foot	Residue on evaporation dried at 105°C. (Dissolved solids): Tons per day	Loss on ignition at 550°C.	Specific conductance K × 10⁶ at 25°C.	Calcium
STATION NO. 18A – KEYHOLE LAKE*																		
1	June 23/65	121:127			32	.....	7	6.8	.....	.....	.....	.....	.....	.....	.....	.....	67.5	5.4
2	June 28	119:122			33	.....	3	7.4	.....	.....	.....	.....	.....	.....	.....	.....	109	7.9
3	July 3	114:117			33	.....	2	7.1	.....	.....	.....	.....	.....	.....	.....	.....	27.5	1.7
4	July 8	106:112			33	.....	4	5.8	.....	.....	.....	.....	.....	.....	.....	.....	4.5	0.5
5	July 8	109:112			33	.....	3	6.5	.....	.....	.....	.....	.....	.....	.....	.....	14.1	1.1
6	July 13	101:107			33	.....	2	6.4	.....	.....	.....	.....	.....	.....	.....	.....	11.4	0.8
7	July 13	104:107			33	.....	2	6.8	.....	.....	.....	.....	.....	.....	.....	.....	18.5	2.0
8	Aug. 22	64:67			48	.....	2	7.6	.....	.....	.....	.....	.....	.....	.....	.....	157	9.8
9	Aug. 29	57:60			48	.....	3	7.5	.....	.....	.....	.....	.....	.....	.....	.....	159	9.9
10	Sept. 3	52:55			40	.....	2	7.6	.....	.....	.....	.....	.....	.....	.....	.....	162	10.0
* name officially approved January 6, 1966.																		
STATION NO. 18A – LAKE*																		
11	Sept. 4/65	51:54			41	.....	7	7.9	.....	.....	.....	.....	.....	.....	.....	.....	649	28.4
* A 15 acre unnamed lake located approximately ¼ mile south of Keyhole Lake, into which it drains during spring runoff. ** Name officially approved, January 6, 1966.																		
STATION NO. 19A – LAKE* NORTH NORTHEAST OF KEYHOLE LAKE**																		
12	Sept. 4/65	51:54			41	.....	5	7.5	.....	.....	.....	.....	.....	.....	.....	.....	261	17.8
* A 30 acre unnamed lake located approximately ½ mile N.N.E. of Keyhole Lake with which it has no drainage connection. ** Name officially approved January 6, 1966.																		
STATION NO. 20A – LAKE*																		
13	Aug. 11/62	206:215			.....	.....	2	7.6	15	0.7	.....	.....	62.8			33.2	80.8	7.1
* a small unnamed lake																		
STATION NO. 21A – FIONA LAKE*																		
14	Aug. 5/62	212:221			.....	.....	1	6.6	10	0	.....	.....	22.0			17.8	18.8	0.3
* Name officially approved January 6, 1966																		
STATION NO. 22A – SUNDAY LAKE*																		
15	Aug. 2/62	215:224			.....	.....	1	8.3	10	0.5	.....	.....	167			64.4	303	20.0
* Name officially approved January 6, 1966.																		
STATION NO. 23A – LAKE*																		
16	Aug. 6/63	9:14			.....	.....	2	7.9	5	0	.....	.....	.....	.....	.....	.....	362	32.4
* A small unnamed lake.																		
STATION NO. 24A – LAKE 1 (PROVISION POND)*																		
17	May 5/62	255:257			32	3.6	4	7.9	.....	.....	.....	.....	.....	.....	.....	.....	341	31.8
18	Sept. 13	125:127			32	3.1	6	7.4	.....	.....	.....	.....	.....	.....	.....	.....	209	17.7
* name not official																		

TABLE II – (Continued)

Chemical Analyses of Surface Waters in the Arctic Drainage Basin

(In parts per million)

Magnesium (Mg)	Iron (Fe) Total	Iron (Fe) Dissolved	Manganese (Mn)	Aluminum (Al)	Copper (Cu)	Zinc (Zn)	Alkalis Sodium (Na)	Alkalis Potassium (K)	Ammonia (NH_3)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulphate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Silica (colorimetric) (SiO_2)	Phosphate (PO_4)	Boron (B)	Hardness as $CaCO_3$ Non-carbonate	Hardness as $CaCO_3$ Total	Sum of constituents	Per cent sodium	Saturation index	Stability index	
at 69°22' 45" N - 106°15' 00" W, VICTORIA ISLAND, N.W.T.																									
3.1	.....	.....	.....	.....	.....	.....	3.0	0.8	.....	0.0	27.1	1.7	6.3	....	0.0	.....	<0.1	....	4.1	26.3	33.6	19	−2.5	12	1
5.0	.....	.....	.....	.....	.....	.....	6.2	1.1	.....	0.0	42.4	2.8	10.7	....	0.3	.....	<0.1	....	5.7	40.5	54.9	24	−1.6	11	2
1.4	.....	.....	.....	.....	.....	.....	2.1	0.3	.....	0.0	11.5	1.7	1.8	....	0.0	.....	<0.1	....	0.7	10.1	14.6	30	−3.1	13	3
0.2	.....	.....	.....	.....	.....	.....	0.2	0.1	.....	0.0	1.6	1.1	0.4	....	0.0	.....	<0.1	....	0.9	2.2	3.3	16	−5.6	17	4
0.9	.....	.....	.....	.....	.....	.....	1.4	0.2	.....	0.0	5.5	2.5	0.7	....	0.0	.....	<0.1	....	0.7	5.2	9.5	36	−4.2	15	5
0.5	.....	.....	.....	.....	.....	.....	0.4	0.2	.....	0.0	3.0	0.9	1.1	....	0.1	.....	<0.1	....	1.6	4.1	5.5	16	−4.6	16	6
0.8	.....	.....	.....	.....	.....	.....	1.7	0.2	.....	0.0	8.7	2.1	1.3	....	0.0	.....	<0.1	....	1.0	8.1	12.4	31	−3.4	14	7
7.2	.....	.....	.....	.....	.....	.....	9.3	1.3	.....	0.0	56.2	3.1	19.5	....	0.0	.....	<0.1	....	8.0	54.1	77.9	27	−1.2	10	8
7.3	.....	.....	.....	.....	.....	.....	9.7	1.3	.....	0.0	57.0	2.6	20	....	0.0	.....	<0.1	....	8.1	54.9	78.9	27	−1.3	10	9
7.4	.....	.....	.....	.....	.....	.....	9.6	1.3	.....	0.0	57.9	3.9	20	....	0.0	.....	<0.1	....	8.1	55.6	80.7	27	−1.2	10	10
at 69°23' 18" N - 106°14' 30" W, VICTORIA ISLAND, N.W.T.																									
54.2	.....	.....	.....	.....	.....	.....	23.0	4.2	.....	0.0	311	2.9	66	.....	2.5	.....	<0.1	....	39	294	334	14	+0.3	7.3	11
at 69°23' 06" N - 106°15' 30" W, VICTORIA ISLAND, N.W.T.																									
11.9	.....	.....	.....	.....	.....	.....	16.5	1.7	.....	0.0	93.5	3.8	38	....	0.4	.....	<0.1	....	16.8	93.5	136	27	−0.8	9.1	12
at 74°09' N - 119°48' W, BANKS ISLAND, N.W.T.																									
4.4	0.04	0.00	0.00	0.00	.....	.....	0.9	0.7	.....	0.0	35.0	7.5	2.2	0.04	0.5	1.7	0.00	....	7.2	35.9	42.3	5	−1.5	11	13
at 73°05' 20"N - 95°06' W, SOMERSET ISLAND, N.W.T.																									
0.7	0.04	0.00	0.00	0.00	.....	.....	0.7	0.1	.....	0.0	3.2	1.5	1.4	0.00	0.3	0.3	0.00	....	1.2	3.8	6.9	28	−4.8	16	14
at 72°43' N - 94°11' 30" W, SOMERSET ISLAND, N.W.T.																									
15.0	0.03	<0.01	0.00	0.00	.....	.....	13.3	0.9	.....	0.0	118	9.1	25.7	0.03	0.4	0.7	0.00	....	15.0	112	143	20	+0.1	8.1	15
near RESOLUTE, CORNWALLIS ISLAND, N.W.T.																									
10.7	0.03	.....	0.00	.....	.....	0.00	19.5	1.5	.....	0.00	102	39.1	33.3	0.13	Trace	0.5	.....	.....	41.1	125	187	25	−0.1	8.1	16
at 75°40' N - 84°33' W, DEVON ISLAND, N.W.T.																									
19.0	.....	0.00	0.00	0.04	0.00	0.00	8.6	1.0	.....	0.0	179	3.9	18.8	0.06	0.9	.....	.....	.....	10.9	158	171	11	+0.1	7.7	17
10.6	.....	0.00	0.00	0.01	0.00	0.00	6.1	1.2	.....	0.0	102	5.5	13.0	0.03	0.7	.....	.....	.....	4.5	88.0	105	13	−0.9	9.2	18

TABLE II – (Continued)

Chemical Analyses of Surface Waters in the Arctic Drainage Basin

(In parts per million)

No.	Date of collection	Number per cent	Stream discharge (Second-feet) Instantaneous at time of collection	Stream discharge (Second-feet) Maximum mean	Water temperature (°F.)	Oxygen consumed (4 hours at 80°C.)	Carbon dioxide (calculated)	pH	Silica (SiO_2)	Turbidity	Suspended matter: Silica (SiO_2)	Suspended matter: Ignition loss	Residue on evaporation dried at 105°C. (Dissolved solids): P.P.M.	Residue on evaporation dried at 105°C. (Dissolved solids): Tons per acre foot	Residue on evaporation dried at 105°C. (Dissolved solids): Tons per day	Hardness as $CaCO_3$: Mg./l.	Hardness as $CaCO_3$: P.P.M.	Calcium
		(Days)																
STATION NO. 25A – LAKE [illegible]																		
1	April 20/62				32	3.1	4	7.0										
2	Sept. 11/62	127 329			32	2.7	4	7.6										

* name not official

STATION NO. 26A – DECCA MASTER LAKE*

3	Aug. 4/60	186 220					3	6.8										

* name not official

STATION NO. 27A – GEOMORPHOLOGIST RIVER*

4	June 30/59	282 326			32		3	5.4										

* name not official

STATION NO. 28A – BOUQUER RIVER*

5	June 30/59	282 326			32			4.7										

* name not official

STATION NO. 29A – BRANT RIVER*

6	June 28/59	284 328			32		5	5.9										

* Name officially approved November 10, 1965.

STATION NO. 30A – STREAM NORTH OF CAMP [illegible]*

7	June 26/59	286 330			32		0.5	8.0										

* name not official

STATION NO. 32A – MUD LAKE*

8	July 27/59	255 302			42		5	6.6										

* name not official

STATION NO. 32A – DRIFTWOOD RIVER*

9	July 27/59	255 302			55		9	6.3										

* name not official

STATION NO. 33A – STREAM*

10	Dec. 13/60						3	6.8	20									
11	Dec. 13						4	6.7	10									
12	Dec. 13						2	7.2	15									
13	Dec. 13						2	7.2	15									
14	Dec. 13						2	7.1	15									

* a small unnamed stream

TABLE II – (Continued)

Chemical Analyses of Surface Waters in the Arctic Drainage Basin

(In parts per million)

Magnesium (Mg)	Iron (Fe) Total	Iron (Fe) Dissolved	Manganese (Mn)	Aluminum (Al)	Copper (Cu)	Zinc (Zn)	Alkalis Sodium (Na)	Alkalis Potassium (K)	Ammonia (NH_3)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulphate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Silica (colorimetric) (SiO_2)	Phosphate (PO_4)	Boron (B)	Hardness as $CaCO_3$ Non-carbonate	Hardness as $CaCO_3$ Total	Sum of constituents	Per cent sodium	Saturation index	Stability index	No.
at 75°40' N - 84°33' W, DEVON ISLAND, N.W.T.																									
20.6	.....	0.00	0.00	0.05	0.00	0.00	9.0	1.2	.....	0.0	191	3.8	21	0.03	1.1	.....	.....	.....	10.4	167	183	10	+0.2	7.5	1
11.1	.....	0.00	0.00	0.05	0.00	0.00	4.7	0.6	.....	0.0	100	3.5	11	0.03	0.5	.....	.....	.....	5.0	87.2	97.3	10	−0.7	9.0	2
at 79°17' N - 105°22' W, ELLEF RINGNES ISLAND,, N.W.T.																									
119	.....	.....	.....	.....	.....	.....	1,100	21.0	.....	0.0	14.5	410	1,892	.....	0.0	0.1	.....	.....	573	585	3,588	80	−2.1	11	3
at 79°11' N - 103°08' W, ELLEF RINGNES ISLAND, N.W.T.																									
.....	.....	.....	.....	.....	.....	.....	6.9	0.7	.....	0.0	0.2	8.1	14	.....	0.4	1.1	.....	.....	11.6	11.8	.....	54	.....	.....	4
at 79°08' N - 103°05' W - ELLEF RINGNES ISLAND, N.W.T.																									
.....	.....	.....	.....	.....	.....	.....	4.7	0.6	.....	0.0	0.0	8.8	9.9	.....	0.4	0.8	.....	.....	10.6	10.6	.....	47	.....	.....	5
at 79°00' N - 102°50' W, ELLEF RINGNES ISLAND, N.W.T.																									
.....	.....	.....	.....	.....	.....	.....	44.5	4.0	.....	0.0	2.4	100	64.5	.....	0.4	5.8	.....	.....	101	103	.....	47	.....	.....	6
at 78°58' N - 102°50' W, ELLEF RINGNES ISLAND, N.W.T.																									
.....	.....	.....	.....	.....	.....	.....	24.0	2.5	.....	0.0	30.0	71·7	29.6	.....	0.4	22	.....	.....	64.9	89.5	.....	36	.....	.....	7
at 78°54' N - 103°50' W, ELLEF RINGNES ISLAND, N.W.T.																									
.....	.....	.....	.....	.....	.....	.....	18.5	2.4	.....	0.0	11.8	16.3	26.7	.....	0.4	8.5	.....	.....	15.9	25.6	.....	58	.....	.....	8
at 78°53' N - 103°49' W, ELLEF RINGNES ISLAND, N.W.T.																									
.....	.....	.....	.....	.....	.....	.....	11.0	1.2	.....	0.0	11.3	84.2	6.6	.....	0.4	5.4	.....	.....	73.2	82.5	.....	22	.....	.....	9
at 78°18' N - 103°43' W, ELLEF RINGNES ISLAND, N.W.T.																									
6.1	0.55	0.04	0.00	.....	.....	.....	12.0	2.6	0.0	0.0	10.6	50.8	9.1	0.0	0.4	4.9	.....	.....	38.3	47.0	99.8	34	−2.8	12	10
5.9	0.20	0.03	0.00	.....	.....	.....	5.5	1.2	0.0	0.0	12.3	47.7	2.1	0.0	0.2	5.8	.....	.....	38.1	48.2	84.0	19	−2.7	12	11
8.4	0.21	0.00	0.00	.....	.....	.....	7.5	1.0	0.0	0.0	17.2	69.9	2.4	0.0	0.2	11	.....	.....	57.3	71.4	123	18	−1.9	11	12
13.9	0.00	0.00	0.00	.....	.....	.....	11.0	1.2	0.2	0.0	18.8	120	3.4	0.0	0.2	12	.....	.....	101	117	194	17	−1.7	11	13
18.3	0.10	0.00	0.00	.....	.....	.....	16.0	1.5	0.2	0.0	16.7	164	5.1	0.0	0.2	5.3	.....	.....	140	154	250	18	−1.8	11	14

TABLE II – (Continued)

Chemical Analyses of Surface Waters in the Arctic Drainage Basin

(In parts per million)

No.	Date of collection	Storage period (Days)	Stream discharge (Second-feet): On date	Stream discharge (Second-feet): Monthly mean	Water temperature (°F.)	Oxygen consumed by $KMnO_4$	Carbon dioxide (calculated) (CO_2)	pH	Color (Platinum units)	Turbidity (Silica)	Suspended matter: Dried at 105°C.	Suspended matter: Ignited at 550°C.	Residue on evaporation dried at 180°C. (Uncorrected results): S. P. M.	Residue on evaporation dried at 180°C. (Uncorrected results): Tons per acre-foot	Residue on evaporation dried at 180°C. (Uncorrected results): Tons per day	Loss on ignition at 550°C.	Specific conductance (micromhos) at 25°C.	Calcium
																		(Ca)
STATION NO. 34A – GLACIAL MELTWATER*																		
1	[illegible]							6.9									87.2	2.3
2	[illegible]							6.8									1.4	3.6
3	[illegible]							6.8									1.0	3.6
* Sampled 160 meters east of meteorological camp, Isachsen.																		
STATION NO. 35A – AGATE RIVER*																		
4	[illegible]	133-147			36		3	6.9									70.3	5.5
* Name not official																		
STATION NO. 36A – STREAM																		
5	June 27/60	152-180			34		4	7.5									784	100
STATION NO. 37A – STREAM																		
6	June 27/60	154-158			32		3	7.3									450	78.2
STATION NO. 38A – STREAM																		
7	June 27/60	154-158					2	7.5									1,416	285
STATION NO. 39A – STREAM																		
8	June 25/60	156-160			37		2	7.0									108	20.9
STATION NO. 40A – STREAM																		
9	June 10/60	140-144			32			3.6									515	96.6
STATION NO. 41A – STREAM																		
10	June 10/60	140-144			32			4.6									184	33.1
* Name not official																		
STATION NO. 42A – DECCA RIVER*																		
11	Aug. 2/59	185-204					3	6.3	25								28.0	0.6
* Name not official																		
STATION NO. 43A – RIVER																		
12	July 10/59	272-319					1	6.3									19.4	

TABLE II – (Continued)

Chemical Analyses of Surface Waters in the Arctic Drainage Basin

(In parts per million)

Magnesium (Mg)	Iron (Fe) Total	Iron (Fe) Dissolved	Manganese (Mn)	Aluminum (Al)	Copper (Cu)	Zinc (Zn)	Alkalis Sodium (Na)	Alkalis Potassium (K)	Ammonia (NH_3)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulphate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Silica (colorimetric) (SiO_2)	Phosphate (PO_4)	Boron (B)	Hardness as $CaCO_3$ Non-carbonate	Hardness as $CaCO_3$ Total	Sum of constituents	Per cent sodium	Saturation index	Stability index	No.
at 78°18' N - 103°28' W, ELLEF RINGNES ISLAND, N.W.T.																									
2.2							13.5	1.6					13.7							14.3					1
2.2							13.7	2.1					14.3							18.2					2
2.5							14.0	3.2					15.3							19.3					3
at 78°57' N - 101°40' W, ELLEF RINGNES ISLAND, N.W.T.																									
4.0							1.8	0.5		0.0	15.5	18.4	2.3			0.8			17.2	29.9	40.9	11	-2.6	12	4
from ISACHSEN DOME, ELLEF RINGNES ISLAND, N.W.T.																									
4.6							0.5	0.3		0.0	56.1	361	0.8			1.1			374	420	556	0.3	-0.1	7.7	5
at entrance to DUMBBELLS DOME, ELLEF RINGNES ISLAND, N.W.T.																									
7.9							0.5	0.3		0.0	33.0	184	2.2		0.0	1.2			201	228	290	0.5	-0.9	9.1	6
crossing DUMBBELLS DOME, ELLEF RINGNES ISLAND, N.W.T.																									
26.6							3.0	0.5		0.0	40.0	756	3.9		0.0	1.0			790	822	1,096	0.8	-0.1	7.7	7
at 78°18' N - 100°05' W, EAST COAST, ELLEF RINGNES ISLAND, N.W.T.																									
3.4							2.9	0.6		0.0	11.2	32.4	1.7		0.0	1.6			31.6	40.8	59.0	13	-2.4	11	8
at 78°01' N - 99°32' W, EAST COAST, ELLEF RINGNES ISLAND, N.W.T.																									
0.3							10.5	0.5		0.0	0.0	206	6.7		0.0	2.9			67.4	67.4	254	22			9
at 77°55' N - 99°25' W, near CAMP ALPHO,* ELLEF RINGNES ISLAND, N.W.T.																									
5.3							6.0	0.4		0.0	0.0	58.6	8.6		0.0	1.1			54.9	54.9	93	19			10
at 80°03' N - 100°15' W, MEIGHEN ISLAND, N.W.T.																									
0.7	0.66	0.30	0.00			0.00	1.6	0.8	0.0	0.0	3.8	1.9	2.6		0.4	1.0			1.3	4.4	13.3	37	-4.7	16	11
at 79°56' N - 99°05' W, WEST COAST, MEIGHEN ISLAND, N.W.T.																									
							1.5	0.7		0.0	1.7	1.8	3.4		0.4	0.8			2.6	4.0		40	-4.8	16	12

TABLE II – (Continued)

Chemical Analyses of Surface Waters in the Arctic Drainage Basin

(In parts per million)

No.	[illegible]	Storage period (Days)	Stream discharge (Second-feet) [illegible]	[illegible]	[illegible]	Oxygen consumed	[illegible] (calculated)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	STATION NO. [illegible]																	
1	[illegible]	[illegible]				.	1	[illegible]									[illegible]	
	STATION NO. 45A – BROOK near COLOUR LAKE*																	
2	[illegible]	[illegible]			33			4.4	5								[illegible]	[illegible]
	STATION NO. 46A – SULPHUR SPRINGS*																	
3	Aug. 18/63	207:219			44		3	7.2	5								[illegible]	[illegible]
	STATION NO. 47A – [illegible] LAKE																	
4	July 27/60	[illegible]			40		2	8.1									213	
5	Sept. 13	[illegible]			42		2	8.0		4[illegible]							[illegible]	[illegible]
6	Aug. [illegible]/63	[illegible]			38	1.3	2	8.0	10	1			111			25.8	[illegible]	[illegible]
7	Aug. 18	[illegible]			37		2	8.1	0								[illegible]	[illegible]
8	Aug. 28	[illegible]			38		3	7.9	0	0			120			53.8	[illegible]	[illegible]
	STATION NO. 48A – SMALL PONDS																	
9	Pond 1 June 26/63	14:29			50	10.2	3	7.8									746	117
10	Aug. 21	14:16			43	13.6	7	7.4	15								925	153
11	July 15	32:38			63	13.7	7	7.5									852	138
12	Pond 2 June27/63	13:28			46	14.6	8	7.5									1,506	279
13	Pond 10 Aug.12/63	17:23			45	13.6	2	8.4	10								1,056	41.1
14	Pond 12 Aug. 12	17:23			....	8.0	4	7.4	25								243	35.4
15	Pond 17 July 14	33:39			61	21.9	8	7.7									896	71.8
16	Pond 19 June26	14:29			50	18.2	3	8.1									632	79.4
17	Pond 23 June26	16:29			50	......	5	7.5									192	317
18	Pond 28 July 13	37:40			63	16.1	6	7.8									488	61.0
19	Pond 32 July 14	36:39			61	13.3	2	8.2					252			163	313	23.3
20	Pond 35 Aug. 12	18:23			50	4.0	3	7.8	10								435	69.8
21	Pond 37 June 27	15:28			46	19.9	4	7.6									581	88.4
22	Pond 42 July 14	36:40			64	21.2	7	7.8									504	79.4

* name not official (Station 45A)

*name not official (Station 46A)

TABLE II – (Continued)

Chemical Analyses of Surface Waters in the Arctic Drainage Basin

(In parts per million)

Magnesium (Mg)	Iron (Fe) Total	Iron (Fe) Dissolved	Manganese (Mn)	Aluminum (Al)	Copper (Cu)	Zinc (Zn)	Alkalis Sodium (Na)	Alkalis Potassium (K)	Ammonia (NH_3)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulphate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Silica (colorimetric) (SiO_2)	Phosphate (PO_4)	Boron (B)	Hardness as $CaCO_3$ Non-carbonate	Hardness as $CaCO_3$ Total	Sum of constituents	Per cent sodium	Saturation index	Stability index	No.
79° 52' N - 98° 43' W, south end of ICE CAP, MEIGHEN ISLAND, N.W.T.																									
.....	.....	.....	.....	.....	.....	.....	0.1	0.1	.....	0.0	0.9	0.5	0.4	.....	0.4	0.2	.....	.....	0.1	0.8	.....	19	-5.7	17	1
at 79°25' N - 90°40' W, AXEL HEIBERG ISLAND, N.W.T.																									
212	0.04	.....	7.2	28.8	0.00	0.90	12.0	3.5	.....	0.0	0.0	1,870	1.7	.....	0.5	18	.....	.....	1,732	1,732	2,492	1.4	.....	.....	2
at 79°25' N - 90°30' W, AXEL HEIBERG ISLAND, N.W.T.																									
223	0.07	.....	0.00	.....	.....	.....	26,700	26.0	.....	0.0	31.8	3,868	42,440	.....	0.7	17	.....	.....	5,797	5,823	75,254	91	+0.2	6.8	3
near ALERT, ELLESMERE ISLAND, N.W.T.																									
.....	0.00	.....	0.00	.....	.....	.....	4.4	0.9	.....	0.0	128	2.7	9.8	.....	0.6	1.2	.....	.....	0.6	106	.....	8.2	.....	.....	4
5.9	0.44	.....	0.10	.....	.....	0.02	4.4	0.5	0.1	0.0	126	3.2	7.3	0.0	0.0	1.4	.....	.....	2.8	107	118	8.1	+0.1	7.8	5
6.0	0.17	<0.01	0.00	<0.01	0.000	0.00	4.2	0.4	0.0	0.0	113	3.3	6.1	0.06	<0.01	1.0	<0.1	.....	3.6	96.2	105	8.7	-0.1	8.2	6
6.1	0.07	.....	0.00	.....	.....	.....	4.3	0.5	.....	0.0	119	2.8	6.4	0.21	0.0	0.4	.....	.....	3.9	101	110	8.4	+0.2	7.7	7
5.9	0.01	<0.01	0.00	0.02		0.00	4.4	0.5	0.0	0.0	118	2.8	6.8	0.0	0.0	0.8	.....	.....	3.0	99.7	109	8.7	-0.1	8.1	8
near LAKE HAZEN, ELLESMERE ISLAND, N.W.T.																									
27.1	0.11	.....	0.04	.....	<0.01	0.00	2.7	5.0	.....	0.0	112	298	2.5	0.59	0.4	4.1	<0.1	.....	311	403	513	1.4	+0.4	7.0	9
44.7	0.27	.....	0.00	.....	<0.01	0.00	4.8	7.3	.....	0.0	110	463	4.7	0.85	0.1	14	<0.1	.....	476	566	747	1.8	0.0	7.4	10
33.5	0.42	.....	0.00	.....	0.012	0.00	3.7	6.2	.....	0.0	131	373	3.3	0.69	0.2	4.2	<0.1	.....	375	483	628	1.6	+0.2	7.1	11
57.4	0.35	.....	0.14	.....	0.00	0.00	5.2	11.7	.....	0.0	168	784	6.8	0.52	0.5	6.8	<0.1	.....	796	934	1,235	1.1	+0.5	6.5	12
67.9	0.05	.....	0.00	.....	<0.01	0.00	76.0	15.9	.....	3.4	234	328	26.5	0.55	0.1	0.6	<0.1	.....	184	382	674	29	+0.8	6.8	13
6.1	0.05	.....	0.00	.....	<0.01	0.00	1.9	0.7	.....	0.0	65.5	60.1	0.4	0.17	0.1	2.7	<0.1	.....	59.6	113	140	3.5	-0.8	9.0	14
61.7	0.23	.....	.....	.....	0.008	0.00	20.0	20.0	.....	0.0	241	273	16.2	0.68	0.3	4.1	<0.1	.....	236	433	586	8.7	+0.3	7.1	15
31.6	0.13	.....	0.00	.....	0.00	0.01	9.0	6.5	.....	0.0	232	145	5.1	0.60	0.7	7.8	<0.1	.....	138	328	400	5.5	+0.8	7.5	16
82.3	0.10	.....	0.00	.....	0.00	0.00	43.0	13.5	.....	0.0	105	1,080	24.8	0.54	0.8	5.6	<0.1	.....	1,044	1,130	1,619	7.5	+0.4	6.7	17
21.0	0.19	.....	.....	.....	0.006	0.00	10.0	3.8	.....	0.0	233	62.1	3.6	0.44	0.2	3.8	<0.1	.....	47.1	239	281	8.2	+0.4	7.0	18
25.3	0.10	.....	0.00	.....	0.004	0.00	3.3	2.2	.....	0.0	172	19.1	4.9	0.34	0.1	0.7	<0.1	.....	21.4	162	164	4.2	+0.3	7.6	19
11.4	0.07	.....	0.00	.....	.....	.....	2.8	0.9	.....	0.0	106	134	1.0	0.22	Trace	3.7	.....	.....	134	221	276	2.7	+0.1	7.6	20
19.8	0.27	.....	0.00	.....	0.00	0.00	1.6	5.2	.....	0.0	108	208	1.6	0.07	0.4	5.1	<0.1	.....	214	302	384	1.1	0.0	7.6	21
18.7	0.06	.....	0.00	.....	0.004	0.00	1.9	2.8	.....	0.0	258	54.9	2.2	0.43	0.3	16	<0.1	.....	64.0	275	303	1.5	+0.6	6.6	22

TABLE II – (Concluded)

Chemical Analyses of Surface Waters in the Arctic Drainage Basin

(In parts per million)

No.	Date of collection	Storage period (Days)	Stream discharge (Second-feet): On sampling date	Stream discharge (Second-feet): Monthly mean	Water temperature (°F.)	Oxygen consumed by KMnO4	Carbon dioxide (calculated) (CO_2)	pH	Color (Hazen) (Units)	Turbidity (Units)	Suspended matter: Dried at 105°C.	Suspended matter: Ignited at 600°C.	Residue on evaporation (dried at 180°C.): P.P.M.	Residue on evaporation (dried at 180°C.): Tons per acre foot	Residue on evaporation (dried at 180°C.): Tons per day	Total hardness as $CaCO_3$	Specific conductance at 25°C.	Calcium
STATION NO. 49A – STREAM*																		
1	June 24/63	56:60			36	4.5	2	8.0	.....	.....	.....	.....	.....	.....	.....	.....	358	40.1
STATION NO. 50A – RUGGLES RIVER																		
2	June 24/63	56:60			36	1.2	1	7.9	.....	.....	.....	.....	.....	.....	.....	.....	148	22.5
STATION NO. 51A – STREAM*																		
3	Aug. 2/63	13:28			.....	.....	2	8.0	10	0	.....	.....	.....	.....	.....	.....	268	48.2
STATION NO. 52A – TUBORG LAKE*																		
4	June 2/65	103:107			37	.....	8	7.6	15	.....	.....	.....	.....	.....	.....	.....	40,660	360
STATION NO. 53A – STREAM*																		
5	Aug. 2/63	13:18			.....	.....	3	7.8	10	1	.....	.....	.....	.....	.....	.....	556	53.6
STATION NO. 54A – ROMULUS LAKE*																		
6	Aug. 10/62	207:216			.....	.....	7	7.6	15	4	14.4	6.4	6,246	.....	.....	1,614	9,800	47.2

* Located 1.25 miles above Chandler Fiord

* Sampled near Tanquary Fiord Camp

* name not official

* Sampled near Eureka Camp.

* Sampled at head of Slidre Fiord..

TABLE II – (Concluded)

Chemical Analyses of Surface Waters in the Arctic Drainage Basin

(In parts per million)

Magnesium (Mg)	Iron (Fe) Total	Iron (Fe) Dissolved	Manganese (Mn)	Aluminum (Al)	Copper (Cu)	Zinc (Zn)	Alkalis Sodium (Na)	Alkalis Potassium (K)	Ammonia (NH_3)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulphate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Silica (colorimetric) (SiO_2)	Phosphate (PO_4)	Boron (B)	Hardness as $CaCO_3$ Non-carbonate	Hardness as $CaCO_3$ Total	Sum of constituents	Per cent sodium	Saturation index	Stability index	No.
at 81°40' N - 69°20' W, TRIBUTARY TO RUGGLES RIVER, ELLESMERE ISLAND, N.W.T.																									
17.3	0.00	....	0.0	.....	.....	0.00	3.9	1.6	.....	0.0	148	41.8	11.2	0.14	Trace	2.4	<0.1	.....	50.5	172	191	4.7	+0.3	7.4	1
at 81°43' N - 69°25' W, ELLESMERE ISLAND, N.W.T.																									
3.8	.....	.....	.....	.....	.....	0.00	0.6	0.5	.....	0.0	72.8	11.7	0.9	0.04	Trace	8.1	.....	.....	12.3	72.0	84.0	1.8	−0.4	8.7	2
81°25' N - 76°45' W, ELLESMERE ISLAND, N.W.T.																									
7.6	0.05	.....	0.00	.....	.....	0.00	4.3	0.8	.....	0.0	126	21.4	6.5	0.09	Trace	1.6	.....	.....	22.8	126	143	6.8	+0.2	7.6	3
at 80°57' N - 75°50' W, ELLESMERE ISLAND, N.W.T.																									
985	.....	.....	.....	.....	.....	.....	8,200	240	.....	0.0	203	2,000	14,500	....	.....	4.9	.....	.....	4,784	4,950	26,390	77	.....	.....	4
at 80°02' N - 85°45' W, ELLESMERE ISLAND, N.W.T.																									
24.1	0.32	0.01	0.00	.....	.....	0.00	20.7	2.5	.....	0.0	114	148	24.4	0.26	0.5	1.9	.....	.....	139	233	332	16	0.0	7.8	5
ELLESMERE ISLAND, N.W.T.																									
216	0.20	0.00	0.00	0.27	.....	.....	1,710	65.5	.....	0.0	163	403	3,065	0.66	1.2	0.4	.....	.....	998	1,132	5,640	75	+0.1	7.4	6

DESCRIPTION OF MUNICIPAL WATER SYSTEMS

DESCRIPTION OF MUNICIPAL WATER SYSTEMS

A — In the Hudson Bay Drainage Basin

QUEBEC

Municipality	AMOS - a Town			BOURLAMAQUE - a Town		
Year(s)	1947	1958	1961	1947	1958	1961-62
Population served:						
In municipality	4,500 (4,265[c])	5,600 (5,145[a])	6,100 (6,080[b])	2,000 (2,460[c])	3,040 (3,018[a])	- (3,344[b])
Outside municipality	0	0	0	0	0	-
Total	4,500	5,600*	6,100	2,000	3,040	3,200*
Date(s) of survey	August 22, 1947; November 10, 1958			August 20, 1947; November 10, 1958		
Ownership	In 1947, municipally owned and operated; in 1958, owned and operated by a Public Utilities Commission. **			In 1947, owned and operated by Lamaque Gold Mines Ltd.; in 1958 the distribution system was municipally owned.		
Source of supply	In 1947, two wells with Harricanaw River; in 1958, 4½ miles distant near La Ferms			Two wells* (springs), 38 feet deep, near Lake Blouin.		
Treatment	In 1947 wells near the river are pumped to reservoir and system. River water just above town is pumped direct to system with chlorination (85 lb/mg), bypassing the old small filters. In 1958, springs pumped with no treatment to reservoir and system.			Water is pumped to the elevated tank and system, from one well at a time with intermittent chlorination.		
Storage capacity (thousand gallons)	Underground reservoir on hill 4½ miles distant (well water) 500			Elevated tank (at Lamaque Mine) ... 110		
Consumption (average in mgd)	1947	1958		1947	1958	
	0.162 River water	0.4		0.48**	0.25	
	0.162 Well water					
	0.324					
Industrial use	Major users are a woollen mill and a dairy.			In 1947 Sigma Mine and Lamaque Mine used 0.144 mgd and 0.108 mgd, respectively; in 1958 Sigma Mine was reported as the only major industrial user.		
Remarks	*Presumably includes some services in Amos East and Amos West, population of 816 and 915 respectively. **In 1947, as the well yield was poor, an emergency supply, about 50 per cent river water was being used.			System installed in 1933 *Wells are said to be on different aquifers and not lake water. **Includes mine consumption.		

Municipality	FORT GEORGE a Settlement	GREAT WHALE a Settlement
Year(s)	1961-62	1961-62
Population served:		
In municipality	- (763[a]) (1,974[b])	- (695[a]) (718[b])
Outside municipality	-	-
Total	800 estd*	210 estd
Date(s) of survey	November 29, 1962	November 30, 1962; March 1963
Ownership	Owned and operated by the Department of Citizenship and Immigration.	Department of National Defence
Source of supply	Fort George (La Grande) River	Great Whale River
Treatment	River water is pumped with chlorination (sodium hypochlorite) to reservoir and system.*	River water is pumped with chlorination*
Storage capacity (thousand gallons)	One underground reservoir 30	No data
Consumption (average in mgd)	No data Capacity ..... 28,800 gpd.	No data
Industrial use	A fish packing plant	Water is supplied to main site of Mid Canada Line.
Remarks	*Includes Indian Hospital and school Hudson Bay Company building and private homes.	*Plant installed in 1961.

[a] Population according to the Tenth Census of Canada, 1956.
[b] Population according to the Eleventh Census of Canada, 1961.
[c] Population according to the Ninth Census of Canada, 1951.

DESCRIPTION OF MUNICIPAL WATER SYSTEMS

A — In the Hudson Bay Drainage Basin

QUEBEC

CHIBOUGAMAU - a Town

1958	1961
3,000* (1,262[a])	- (4,765[b])
0	-
3,000	4,500 estd

November 15, 1958

Municipally owned and operated

Lake Gilman, nearby

Water is pumped with chlorination to reservoir and system.

Reservoirs (125,000 gal each of two compartments)... 250

1958	1961
0.105	0.65

None

*Total population 3,200

DUPARQUET - a Town

1947	1958	1961	1963
2,000 (1,485[c])	1,000	- (1,144[a])	- (978[b])
0	0	-	-
2,000	1,000	1,000 estd	1,200

August 26, 1947; January 12, 1958; October 16, 1963

In 1947, owned and operated by Beattie Mines Ltd.; in 1958 and 1963, system is municipally owned but water purchased from Beattie Mines Ltd.

In 1947 one deep well and Lake Duparaquet; in 1958 and 1963 well only used, with lake water as a standby supply.

In 1947 lake water is pumped to plant at mine where alum (143 lb/mg) is added in a wooden cylindrical mixing tank (2,400 gal); water, then flows to a cylindrical wooden settling tank (10,000 gal), is sand-filtered in 3 wooden cylindrical filters with chlorination to reservoirs, lime-treated to pH 7.6—8.2, and them pumped to system.* In 1947, 1958 and 1963 well water is pumped without treatment to reservoirs and system. When lake water is used for town supply it is chlorinated.

Two tanks in 1947 ..... 17 and 30

Two ground reservoirs in 1958 and 1963 ..... 50 and 50

1947	1958	1963
0.036 Well water	0.087 (Max. - 0.10)	No record
0.036 Lake water†		
0.072		

Lake Duparquet water is used without treatment for processing in the Beattie Mine and mill. Mine closed down in 1957.

*pH of lake water 6.9 (Max. pH 7.1); in April and May, when raw water pH may decrease to pH 6.3, soda ash is also added.

†In 1947, because the well supply was low, about 50 per cent lake water was being used as an emergency supply.

HALET TOWNSITE (MALARTIC)

A company townsite within Malartic municipal boundaries

1959-63
150
0
150

June 13, 1959

Owned and operated by Malartic Goldfields, Ltd.

Piche River

River water is pumped with pre-chlorination, coagulated with alum (550 lb/mg) and sodium aluminate (150 lb/mg) in a wooden tank (10,000 gal), soda-ash treated to pH 9.5 fluoridated (sodium-fluoride), and pressure-filtered (2) to system.

Pressure tank 0.6

Elev. tank (raw water only) 100*

1958	
Domestic	- 0.027 (Max. - 0.030)
Industrial	- 1.4
Total	1.427

Untreated water is used in mining and ore concentration; treated water is used for the townsite and for drinking purposes at the mine and mill.

*⅔ of raw water supply is held in reserve for fire protection.

LA SARRE — a Town

1947	1959	1961
3,000 (2,744[c])	3,450 (3,155[a])	- (3,944[b])
0	0	-
3,000	3,450	3,900 estd

August 25, 1947; June 15, 1959

Municipally owned and operated

One deep well near Lac de l'Aqueduc and Lac de l'Aqueduc.*

No treatment; well water is pumped to open reservoir and system.

One reservoir (fire protection only) - No

1947	1958-59
0.155 estd	0.125

None

*Standby supply

MACAMI — a Town

1958-59	1961
1,450 (1,388[a])	- (1,614[b])
20*	-
1,470	1,500 estd

June 15, 1959

Municipally owned and operated

Lois River (Riviere Lois)

Water enters underground reservoir and is pumped with chlorination to the system.

Underground reservoir 525

1958-59
18,000 gpd

The Sanitorium St. Jean uses this supply.

*Two farms

DESCRIPTION OF MUNICIPAL WATER SYSTEMS

A – In the Hudson Bay Drainage Basin

QUEBEC

Municipality	MALARTIC - a Town			
Year(s)	1947	1958-59	1960-61	1963
Population served:				
In municipality	5,500 (5,983[c])	6,350 (6,818[a])	6,850 (6,998[b])	-
Outside municipality	0	0	0	-
Total	5,500	6,350*	6,850	7,050*
Date(s) of survey	August 25, 1947; November 11, 1958; June 13, 1959; March 12, 1960; October 17, 1963.			
Ownership	Municipally owned and operated			
Source of supply	In 1947, Malartic River (Milhaut Lake); in 1958, 1960 and 1963 Malartic River and one well, 5 miles distant.**			
Treatment	Well water is used without treatment; the river water is pumped from a sump well to a circular coagulation-settling tank (Precipitator) with addition of alum, sodium aluminate, and sodium carbonate, then rapid sand-filtered, stabilized with soda ash to pH 8, post-chlorinated (1-9 lb/ mg), and repumped to reservoirs and system. Activated silica and activated carbon are added, at certain times, to improve coagulation and to remove tastes and odours, respectively.			
Storage capacity (thousand gallons)	In 1947, one reservoir ..... 35 In 1958-63, two reservoirs ..... 35 & 300			
Consumption (average in mgd)	1947	1958		1959-60
	0.40	Well water 0.080		0.05
		River water 0.420		0.47
		Total 0.500		0.52 (Max.-0.75)
Industrial use	Canadian Malartic Gold Mines, Barnet Mines and East Malartic Mines have their own process water supplies but use the town water for domestic purposes, using about 26 per cent of the total pumpage.			
Remarks	*Includes Canadian Malartic, East Malartic, Barnet Mines townsite.			

Municipality	SULLIVAN - a Townsite*		VAL d'OR - a Town		
Year(s)	1959	1961	1947	1958-59	1961-62
Population served:					
In municipality	1,148[a]	- (1,146[b])	7,000 (8,685[c])	9,950 (9,878[a])	10,500 (10,983[b])
Outside municipality	0	0	0	0	0
Total	1,148	1,145 estd	7,000	9,950	10,500
Date(s) of survey	August 20, 1947; June 14 and Sept. 16, 1959.		August 20, 1947; September 16, 1959;		
Ownership	.....		Municipally owned and operated		
Source of supply	Purchased from Val d'Or		Three springs near Lake Blouin		
Treatment	*See* Val d'Or		Spring water is pumped from a collecting pond with chlorination to the elevated tank and system.		
Storage capacity (thousand gallons)	None		Elev. tank 100		
Consumption (average in mgd)	1947	1958-59	1947	1958-59	
	0.065	0.9	1.0*	1.8 (Max.-1.5)*	
			Capacity-2.0	5.0	
Industrial use	*See* Val d'Or		Major users are Val d'Or Airport and the Sigma Mines (Quebec) Ltd. for domestic purposes only; also, in 1947, the C.N. Rys.		
Remarks	*In the unorganized township of Dubuisson near Val d'Or		*Includes Sullivan (Mines) Townsite and former Sigma Townsite areas.		

[a]Population according to the Tenth Census of Canada, 1956.
[b]Population according to the Eleventh Census of Canada, 1961.
[c]Population according to the Ninth Census of Canada, 1951.

DESCRIPTION OF MUNICIPAL WATER SYSTEMS

A — In the Hudson Bay Drainage Basin

QUEBEC

NORMETAL - a rural municipality		QUEBEC LITHIUM TOWNSITE*		SENNETERRE - a Town		
1961	1963	1959	1961	1959	1961	1963
- (1,892[a]) (2,284[b])	1,800	110	- (104[b])	400 (2,197[a])	- (3,246[b])	600 (4,500)†
-	0	0	-	0	0	0
1,800 estd	1,800 estd	110	100 estd	400 estd	500 estd	600
October 21, 1963		June 12, 1959		June 21, 1959; October 17, 1963		
Owned by Normetal Mining Company; operated by the Rural Municipality.		Privately owned and operated by the Quebec Lithium Corporation, Ltd.		Municipally owned and operated		
Calamite River, nearby*		Roy Lake		Springs		
Water is pumped with chlorination to reservoir and system.		Lake water is pumped from a pond-reservoir with pressure, sand-filtration and chlorination (sodium hypochlorite) to system.		Water flows by gravity with chlorination to reservoirs and system.		
One	50	Pond-reservoir	370	Concrete reservoir		250
No data		1958		1958-59	1963	
		0.14 (Max. - 0.2)		0.20	0.3 (Max)	
Water is used by the Normetal Mining Co. Ltd.		The treated water is also supplied to the mill and mine as domestic supply. At times, untreated Roy Lake water is used as additional process water to Lottie Lake water, the normal process water.		In 1958-59, the C.N. Rys. used 8 to 10 per cent of the total pumpage.		
*An auxiliary supply is available.		* A company townsite near Barraute, Que.		† Total population.		

ONTARIO

ANSONVILLE an unincorporated community*			BLACK RIVER TOWNSHIP		CALVERT TOWNSHIP	
1958	1961	1963	1958-59	1961	1958-59	1961
2,800 (2,883[a])	- (3,080[b])	4,035†	350 (2,881[a])†	350 (3,091[b])†	3,500 (3,993[a])†	- (5,233[b])†
0	-	84*	0	0	0	-
2,800 estd	3,000 estd	4,119†	350	350 estd	3,500*	3,800 estd*
August 12, 1959; 1961; October 16, 1963			August 11, 1959		August 12, 1959	
Distribution system, municipally owned and operated by Calvert Township; water purchased from Iroquois Falls.			*See* Matheson, Ont.			
Abitibi River treated; supplied from Iroquois Falls, Ont.			Supplied from Matheson, Ont.		*See* Ansonville and Montrock	
See Iroquois Falls			*See* Matheson			
None in Ansonville			None in Black River Township			
1958-59	1961		Included in Matheson consumption			
0.275†	0.35†					
None			None			
*In Calvert Township †Includes Montrock consumption			†Total township population		*Communities of Ansonville and Montrock † Total township population	

DESCRIPTION OF MUNICIPAL WATER SYSTEMS

A — In the Hudson Bay Drainage Basin

ONTARIO

Municipality	CHAPLEAU an unincorporated community*		COCHRANE - a Town		
Year(s)	1958	1961	1957	1959	1961
Population served:					
In municipality	3,400 (3,407[a])	3,700 (3,785[b])	- (3,695[a])	4,000	4,500 (4,521[b])
Outside municipality	0	0	-	300*	300*
Total	3,400	3,700	3,700	4,300	4,800
Date(s) of survey	August 8, 1958		August 11, 1957; August 12, 1959; 1961		
Ownership	Municipally owned and operated by Chapleau Township.		Owned and operated in 1959 by a Public Utilities Commission.		
Source of supply	Kebsquasheshing Lake		Two wells, 160 feet deep; emergency supply from 4 small spring-fed lakes.		
Treatment	Water is pumped with chlorination from 560 feet out in lake to standpipe and system.		In 1959, water is pumped to a circular precipitation basin, treated with alum (150 lb/mg) and lime (2,795 lb/mg) to remove iron and partially soften the water; it then flows by gravity to the underground reservoir from which it is pumped with chlorination (6.8 lb/mg) to standpipe and system.		
Storage capacity (thousand gallons)	Standpipe ..... 85 (C.P. Ry. also has reservoirs)		Standpipe ..... 83 Underground reservoir 300		
Consumption (average in mgd)	1958		1957	1959	1961
	0.30		0.30	0.37	0.4
	Plant capacity 0.90				
Industrial use	C.P. Ry. uses about 30 per cent of total pumpage.		The C.N. Rys. and Ontario Northland Railway use about 30 per cent of total pumpage.		
Remarks	*In Chapleau Township		*In Glackmeyer Township		

Municipality	HEARST - a Town		
Year(s)	1957	1959	1961
Population served:			
In municipality	- (2,214[a])	2,487	- (2,373[b])
Outside municipality	-	150	-
Total	2,400 estd	2,637	2,640 estd
Date(s) of survey	August 8, 1957; August 13, 1959; October 12, 1963		
Ownership	In 1957 municipally owned and operated: since 1959, owned and operated by a Public Utilities Commission.		
Source of supply	Up to 1957 and since 1961, Mattawishkwia River; from 1959 to 1961 Johnson Lake with the river as a standby supply.		
Treatment	In 1957, Mattawishkwia River water is pumped with chlorination to system. In 1959, a new plant pumps Johnson Lake with chlorination to the elevated tank and system. In 1961 use of Johnson Lake discontinued and Mattawishkwia River is used with chlorination.		
Storage capacity (thousand gallons)	Elev. tank 250		
Consumption (average in mgd)	1957	1959	
	0.2	0.3 estd	
Industrial use	Main users are C.N. Rys. and a lumber company.		
Remarks	* In St. Pius in Kendall, an unorganized territory.		

[a] Population according to the Tenth Census of Canada, 1956.
[b] Population according to the Eleventh Census of Canada, 1961.
[c] Population according to the Ninth Census of Canada, 1951.

DESCRIPTION OF MUNICIPAL WATER SYSTEMS

A – In the Hudson Bay Drainage Basin

ONTARIO

FOLEYET an unincorporated community		GERALDTON - a Town			GLACKMEYER TOWNSHIP
1961	1963	1957	1959	196	1959-61
- (504[b])	400 (550[a])	- (3,263[a])	3,269 (3,375[b])	-	300 (1,108[a])† (1,172[b])†
-	0	-	0		0
450 estd	400 estd	3,250 estd	3,269	3,300 estd	300
October 14, 1963		August 7, 1957; August 14, 1959			August 12, 1959
System owned and operated by C.N. Rys.; community purchases water for their use.		Municipally owned and operated			*See* Cochrane
Ivanhoe River, nearby		Lake Reesor			Wells, treated; supplied from Cochrane
Water is pumped with chlorination (liquid-hypochlorite) to C.N. Rys. reservoir and system.		Water is pumped with chlorination (8 lb/mg) to elevated tank and system.			*See* Cochrane
Elev. tank ..... 80 estd.		Elev. tank 100			
1963		1957	1958-59		
No record†		0.4	0.445 (Max. - 0.50)		
Only C.N. Rys.		Only large users are a soft-drink bottling plant and a dairy.			
†Pumped steadily to waste in winter to prevent freezing in elevated tank.					†Total township population

IROQUOIS FALLS - a Town

1957	1959	1961
1,350 (1,478[a])	1,400	1,500 (1,681[b])
-	3,500*	3,800*
1,350	4,900	5,300 estd

August 12, 1957; August 12, 1959

Plant is privately owned and operated by the Abitibi Power and Paper Co., Ltd.; distribution system is municipally owned and operated.

Abitibi River in town

In 1957 river water is pumped to system with coagulation using alum and activated silica through pressure-filters and diatomaceous filters, with lime-treatment to pH 7.0-7.3. In 1959 river water is pre-chlorinated, coagulated (alum-248 lb/mg and activated silica), filtered, lime-treated (72 lb/mg) and chlorine (2.7 lb/mg) added at clear well and pumped to elevated tank and system.

Elev. tank 62
Clearwell 67
Elev. tank (raw water) 83

1957	1959
0.55 (estd)**	0.656**

Capacity of system - 0.72

The pulp and paper plant uses about 10 per cent of the treated water and also raw river water, chlorinated only.

*Ansonville and Montrock in Calvert Township

** Includes Ansonville and Montrock.

DESCRIPTION OF MUNICIPAL WATER SYSTEMS

A – In the Hudson Bay Drainage Basin

ONTARIO

Municipality	KAPUSKASING - a Town			
Year(s)	1957	1959	1961	1963
Population served:				
In municipality	5,200 (5,463[a])	6,000 (6,870[b])	-	-
Outside municipality	0	0	-	-
Total	5,200	6,000	6,600 estd	7,187 estd
Date(s) of survey	August 9, 1957; August 13, 1959			
Ownership	Plant is privately owned and operated by the Spruce Falls Power and Paper Co. Ltd.; distribution system is municipally owned and operated.			
Source of supply	Kapuskasing River			
Treatment	In 1957 river water enters settling basins and is coagulated with alum (about 50 lb/mg) and activated silica (100 lb/mg); it is then pumped with chlorine (12 lb/mg) and lime (280 lb/mg) through pressure filters (2) to elev. tank and system.*			
Storage capacity (thousand gallons)	Elev. tank 104			
Consumption (average in mgd)	1957: 1.0	1959: 0.65		
	Capacity of system (1959) - 0.90			
Industrial use	About 10 - 12 per cent of the finished water is used in the paper mill; this mill also uses about 28 - 30 mgd river water after pressure filtration (22 filters) only.			
Remarks	*In 1957 whenever the raw water alkalinity was low, soda ash was added with the lime at the coagulation basin.			

Municipality	LONGLAC an unorganized community*			MATHESON - a Town	
Year(s)	1959	1961	1963	1959	1961
Population served:					
In municipality	415 (865[a])*	- (1,144[b])*	700	859 (758[a])	900 estd (853[b])
Outside municipality	0	0	0	350*	350*
Total	415**	575 estd	700	1,209	1,250 estd
Date(s) of survey	August 16 and November 23, 1959; October 11, 1963.			August 11, 1959	
Ownership	Owned and operated by Improvement District of Longlac.			Municipally owned and operated	
Source of supply	Long Lake, nearby			Spring-fed lake, nearby	
Treatment	Lake water is pumped with pre-chlorination, alum and micromet added, and pressure-filtered to elev. tank and system.			Lake water is pumped with chlorination to system.	
Storage capacity (thousand gallons)	Elev. tank 50			None, except lake	
Consumption (average in mgd)	1959: 0.07 (Max. - 0.075)	1963: 0.076		1959: 0.085 (Max. - 0.10)	
	Capacity of system 0.432			Capacity of system about 0.2	
Industrial use	A paper company is supplied with drinking water.			None; the asbestos mine near town has its own water supply.	
Remarks	*In Improvement District of Longlac **Total population (Nov. 1959) - 943.			*In Black River Township	

[a] Population according to the Tenth Census of Canada, 1956.
[b] Population according to the Eleventh Census of Canada, 1961.
[c] Population according to the Ninth Census of Canada, 1951.

DESCRIPTION OF MUNICIPAL WATER SYSTEMS

A — In the Hudson Bay Drainage Basin

ONTARIO

KENDALL - an unorganized territory	KENDREY TOWNSHIP	LAKEVIEW an unorganized community in Whitney Township
	1959-61	1961-63
	800 (1,061[a])† (1,067[b])†	-
	0	-
	800 estd**	400
	August 12 and September 1, 1959; 1963	
	Distribution system owned by the Township	
	Mattagami River purchased from Smooth Rock Falls	
See Herast, Ont.	*See* Smooth Rock Falls	*See* Porcupine and South Porcupine
	None	
	*An Improvement District until Jan.1, 1960. †Total township population **Area served known as Unionville in 1963.	

MATTAGAMI HEIGHTS an unorganized community*			MONTROCK an unincorporated community*		MOOSE FACTORY an unincorporated community	
1959	1961	1963	1959	1961	1961	1962-65
- (1,132[a])†	- (1,423[b])†	-	700 (799[a])	- (893[b])	- (477[a])(689[b])	-
-	-		0	-	-	-
900 estd	1,050 estd	1,200 estd	700	800 estd	1,200*	1,500 estd
August 17, 1959; October 15, 1963			August 12, 1959.....		December 1962 and July 15, 1965.....	
Privately owned and operated.....			*See* Iroquois Falls and Ansonville, Ont.		In 1962 owned and operated by Department of National Health and Welfare and in 1965 by Northern Canada Power Commission.**	
			Abitibi River, treated; supplied from Iroquois Falls, Ont.		Moose River, 1 mile above tidal influence.	
See Mountjoy Township			*See* Iroquois Falls, Ont and Ansonville, Ont.		In 1962-1965 clarification, pressure filtrator and chlorination (alum and soda ash). In 1965 lime used to adjust pH and activated silica as a coagulation aid.	
					In 1965, two concrete tanks ... 80 total	
					1962	1965
					No data	0.080
					Capacity of system.....	0.100
			None.....		None.....	
*In Mountjoy Township †Community population			*In Calvert Township		*Includes hospital **System installed in 1954	

DESCRIPTION OF MUNICIPAL WATER SYSTEMS

A – In the Hudson Bay Drainage Basin

ONTARIO

Municipality	MOOSONEE, an unincorporated community		MOUNT JOY TOWNSHIP		
Year(s)	1961	1965	1959-60	1961	1963
Population served:					
In municipality	- (214[a]) (975[b])	- (500[c])	- (1,920[a])†	- (2,437[b])†	-
Outside municipality	-	-	-	-	-
Total	600 estd	400 estd	900 estd	1,050 estd	1,200 estd
Date(s) of survey	November 29, 1962; July 13, 1965		August 13, 1957; August 17, 1959; October 15, 1963.		
Ownership	Owned and operated by Ontario Northland Transportation Commission.		Privately owned and operated by Vallée Construction Co. Ltd.		
Source of supply	Store Creek		Well, 90 ft deep, near river and Mattagami River.		
Treatment	Creek water pumped with chlorination to elev. tank and system.		River water is connected to well; mixed water (usually less than ⅓ river water) is pumped with chlorination (sodium hypochlorite) direct to system.		
Storage capacity (thousand gallons)	Dam on creek Elevated tank 50		None		
Consumption (average in mgd)	1965 0.080 Capacity of system - 0.360		1959 0.1	1963 0.09	
Industrial use	None, except railway use.		None		
Remarks	RCAF station has a new system on nearby creek.		† Total township population * Communityserved known as Mattagami Heights.		

Municipality	SOUTH PORCUPINE, an unincorporated community in Tisdale Township*			
Year(s)	1957	1959	1961	1963
Population served:				
In municipality	4,660 (4,017[a])	4,862	- (5,144[b])	4,646
Outside municipality	0	0	0	0
Total	4,660	4,862	4,750 estd	4,646
Date(s) of survey	August 13, 1957; August 11, 1959; October 15, 1963.			
Ownership	Owned and operated by Tisdale Township			
Source of supply	Two wells, 48 and 52 ft deep, 3 miles distant in Shaw Township			
Treatment	Two wells are pumped alternatively with chlorination (8 lb/mg) and fluoridation (30 lb/mg NaF) to reservoir from which the water flows by gravity (180 ft head) to system.			
Storage capacity (thousand gallons)	Covered ground reservoir 1,500			
Consumption (average in mgd)		1957-58 0.35	1959 0.46	
Industrial use	None, but, after September 1, 1959, about 0.06 mgd will be supplied to a nearby mining company and its townsite.			
Remarks	*See* also Tisdale and Whitney Townships.			

[a] Population according to the Tenth Census of Canada, 1956.
[b] Population according to the Eleventh Census of Canada, 1961.
[c] Population according to the Ninth Census of Canada, 1951.

DESCRIPTION OF MUNICIPAL WATER SYSTEMS

A — In the Hudson Bay Drainage Basin

ONTARIO

PORCUPINE
an unincorporated community (Townsite) in Whitney Township

1959	1961	1963
1,419 (668[a])†	- (1,213[b])†	1,350 (1,848)†
- *	-	-
1,419	1,375	1,350

August 11, 1959; October 15, 1963 ....

Owned and operated by Whitney Township

Well, 42 ft deep, fed by springs 2 miles distant: In 1963 Bob's Lake water being used to recharge aquifer.

No treatment; water is pumped to reservoir and system.

Underground concrete reservoir .. 200

1958
0.05 (Max. - 0.075)
Capacity of system - 0.1

None .....

† Total township population
* *See* Lakeview and Whitney Townships.

SCHUMACHER
an unincorporated community in Tisdale Township

1957	1959	1961-63
- (3,017[a])	-	- (3,071[b])
-	-	-
3,500*	3,546*	3,322*

August 11, 1959 .....

Owned and operated by Tisdale Township

Mattagami River, chlorinated; purchased from the Hollinger Consolidated Gold Mines Ltd., Timmins.

The purchased water is fluoridated (15 lb/mg) and pumped to system by the township.

None .....

1959
0.30
Capacity of system - 0.8

None .....

* Includes some in Tisdale Township.

SMOOTH ROCK FALLS - a Town

1959 - 61
1,145 (1,104[a]) (1,131[b])
800
1,945

August 12 and September 1, 1959.....

Privately owned and operated by the Abitibi Power and Paper Co. Ltd.

Mattagami River .....

River water is pumped with chlorination (54 lb/mg) to system.

Elev. tank (fire storage only)..... 125

1959
0.65 (Max. - 1.15)
Capacity of system - 2.0

The paper company uses the water for drinking purposes only.
* In Kindrey Township, including Unionville community.

TIMMINS a Town

1957	1959	1961	1963
27,500 (27,557[a])	28,000	- (29,270[b])	29,000
0	0	0	0
27,500	28,000	28,500 estd	29,000

August 13, 1957; August 17, 1959; October 15, 1963.....

Plant owned and operated by Hollinger Consolidated Gold Mines Ltd.; distribution system municipally owned and operated.

Mattagami River, 1½ miles distant .....

In 1957 and 1959 water is pumped with chlorination (24 lb/mg) to system.

None .....

1957	1959	1963
2.0	2.1 (Max. - 2.77)	2.03

Mines in the area have their own supply; the brewery uses this water.

TISDALE TOWNSHIP

1959	1961	1963
- (8,092[a])	1,100 (8,650[b])†	1,101*
-**	8,072**	7,968**
8,408	9,172	9,069

August 11, 1959.....

See South Porcupine and Schumacher, Ont.

* Dome Mines and Lakeview area of Whitney Townships.
** Schumacher and South Porcupine
† Total township population

DESCRIPTION OF MUNICIPAL WATER SYSTEMS

A – In the Hudson Bay Drainage Basin

ONTARIO

Municipality	UNIONVILLE an unorganized community*	WHITNEY TOWNSHIP		
Year(s)		1959	1961	1963
Population served:				
In municipality		200* (1,689[a])	400 estd* (1,838[b])†	500*
Outside municipality		1,419**	1,375**	1,350**
Total		1,619	1,775 estd	1,850
Date(s) of survey		August 11, 1959; October 15, 1963		
Ownership		Owned and operated by Whitney Township.		
Source of supply		Well, 42 ft deep, fed by springs in Porcupine.		
Treatment	*See* Smooth Rock Falls and Kendrey Township	No treatment; water is pumped to reservoir and system. *See* Porcupine and South Porcupine.		
Storage capacity (thousand gallons)		Underground concrete reservoir - No data		
Consumption (average in mgd)		1959 0.05 (Max. - 0.075) Capacity of system - 0.1		
Industrial use		None		
Remarks	* In Kendrey Township	* Served in Lakeview area by Tisdale Township (South Purcupine) ** Community of Porcupine. † Total township		

B – In the Labrador Drainage Basin

QUEBEC

Municipality	FORT CHIMO* - a settlement		SCHEFFERVILLE* an unorganized community or townsite	
Year(s)	1959	1963	1959	1961
Population served:				
In municipality	100 (225[a])	225 (480)† (468[b])	4,100 (1,632[a])	- (3,178[b])
Outside municipality	0	0	0	0
Total	100	225	4,100	3,400 estd
Date(s) of survey	December 15, 1959; April 4, 1961; February, 1963		March 7, 1959	
Ownership	Owned and operated by the Department of Northern Affairs and National Resources.		Privately owned by Iron Ore Co. of Canada; leased and operated by the municipality.	
Source of supply	In 1959 a small pond; in 1963 Stewart Lake, 5 miles distant: a creek in settlement is auxiliary supply.		Knob Lake	
Treatment	In 1963 water is pumped into 1,000 gal tank on truck, chlorinated (sodium hypochlorite) and hauled daily to reservoirs and systems in various buildings and locations (Nordair, Dept. of Transport, Dept. of Northern Affairs and National Resources, Catholic Mission etc.)		Lake water is filtered and pumped with chlorination to the system.	
Storage capacity (thousand gallons)	None, except the individual reservoirs		None, except Knob Lake	
Consumption (average in mgd)	1963 3,600 gpd (Max. - 4,000 gpd) Capacity - 7,000 to 8,000 gpd		1959 Domestic 0.30 Industrial 0.25 Total 0.55	Plant capacity- 2.0 mgd
Industrial use	None		Mining uses about 45 per cent of the total pumpage.	
Remarks	* No truly organized system. Present supply started in 1959. † Total population may rise to 500 in summer.		*Previously known as Knob Lake	

[a] Population according to the Tenth Census of Canada, 1956.
[b] Population according to the Eleventh Census of Canada, 1961.
[c] Population according to the Ninth Census of Canada, 1951

DESCRIPTION OF MUNICIPAL WATER SYSTEMS

A – In the Hudson Bay Drainage Basin
NORTHWEST TERRITORIES

RANKIN INLET
a settlement

1961-62	1965
- (529[b])	387 (387[c])
-	0
700	387

1962-1963; July 26, 1965

Owned and operated by the Department of Northern Affairs and National Resources.

In 1962 and 1965 Lake Nipissar, 1½ miles distant, with Loon Lake as an auxiliary supply; in 1966 Williamson's Lake, will replace Lake Nipissar as the main source.

In 1962-1965 Lake Nipissar water is pumped with chlorination to system.

Three tanks ..... 19.8 total
Lake Nipissar 160,000

1962-63	1965
Approx. 0.315	0.025

None

System to Lake Nipissar installed in 1958.

C – In the Arctic Drainage Basin
NORTHWEST TERRIROTIES

ALERT (ELLESMERE ISLAND)

1961
- (9[a]) (31[b])
-
No data

1959, 1960 and 1963

Department of National Defence

Upper Dumbell Lake and well*

Filtration and chlorination**

No data

No data

None

* Supplies the Wireless Station.
** A new treatment plant was installed in 1965.

CAMBRIDGE BAY

1961	1963	1965
- (798[a]) (531[b])	140 (250[c])	- (500[c])
-	0	-
140 estd	140	300

January 14, 1963 and July 29, 1965

Department of Northern Affairs and National Resources

In 1963 small unnamed lake on Dewline site; in 1965 Water Supply Lake and Grenier River.

In 1965 water is chlorinated (calcium hypochlorite) in tanks and hauled by truck to settlement buildings.*

Small tanks in buildings

1963	1965
5,000 gpd	3,000 gpd

None

* The water hauling and treating equipment is owned and operated by a private company

DESCRIPTION OF MUNICIPAL WATER SYSTEMS

C – In the Arctic Drainage Basin

NORTHWEST TERRITORIES

Municipality	**FROBISHER BAY** (Baffin Island)	
Year(s)	1961-63	1965
Population served:		
In municipality	- (512[b]) (1,900[c])	500 (1,500[c])
Outside municipality	-	0
Total	1,750	500
Date(s) of survey	November, 1962; 1963 and July 16, 1965.	
Ownership	In 1963 Dept. of Transport; In 1965 Dept. of Northern Affairs and National Resources owned, operated by Northern Canada Power Commission.	
Source of supply	In 1961 a small pond 2 miles from settlement; in 1962-63 Lake Catherine: in 1964-65 Lake Geraldine. Sylvia Grennel River is an auxiliary supply.	
Treatment	In 1962 pond water hauled to consumer reservoirs and systems: in 1963 Lake Catherine water hauled to system with chlorination; in 1965 Lake Geraldine water is coagulated filtered, softened and sterilized using lime, sodium aluminate, alum, chlorine, ozone and sodium silicate. Fluoridation is being considered.	
Storage capacity (thousand gallons)	One concrete reservoir	124
Consumption (average in mgd)	1963	1965
	38,000 gpd	65,000 gpd
	Capacity – 38,000 gpd	250,000 gpd
Industrial use	A hospital and power plant use the treated water in 1965.	
Remarks	No organized system until May 4, 1964.	

Municipality	**RESOLUTE** (Cornwallis Island)
Year(s)	1963
Population served:	
In municipality	- (75[a]) (153[b])
Outside municipality	-
Total	100 estd
Date(s) of survey	
Ownership	Department of National Defence
Source of supply	A small lake
Treatment	Ion exchange softening and chlorination
Storage capacity (thousand gallons)	No data
Consumption (average in mgd)	None
Industrial use	
Remarks	A Dept. of Transport base is located 3 miles distant and an Eskimo village 4 miles distant.

[a] Population according to the Tenth Census of Canada, 1956.
[b] Population according to the Eleventh Census of Canada, 1961.
[c] Population according to the Ninth Census of Canada, 1951.

TABLE III

CHEMICAL ANALYSES OF MUNICIPAL WATER SUPPLIES

TABLE III

Chemical Analyses of Municipal Water Supplies

A – Hudson Bay Drainage Basin – Quebec

(In parts per million)

	Municipality	AMOS			
	Source(s)	Wells, springs and Harricanaw River			
		Wells	Springs		Harricanaw River
		Raw and finished water			
	Sampling point	At reservoir	At town tap		At sump well
1	Date of sampling	Aug. 22/47	Nov. 25/58	Oct. 17/63	Aug. 23/47
2	Storage period (days)	4:8	9:20	53:102	16
3	Sampling temperature, °C.	8	5.6	9.7	.....
4	Test temperature, °C.	21.2	23.4	23.6	.....
5	Oxygen consumed by $KMnO_4$	.....	.....	.....	.....
6	Carbon dioxide (CO_2), (calculated)	1.2 (8)	0.5	1.5	14
7	pH	8.5 (7.4)	8.2	7.7	6.5
8	Colour	3 (45)	0	5	110
9	Turbidity	5	0	0.1	20
10	Suspended matter, dried at 105°C.	8.2	.....	.....	.....
11	Suspended matter, ignited at 550°C.	4.4	.....	.....	.....
12	Residue on evaporation, dried at 105°C.	224	65.2	.....	82.4
13	Ignition loss at 550°C.	29.6	1.6	.....	33.2
14	Specific conductance, micromhos at 25°C.	354	94.2	91.8	.....
15	Calcium (Ca)	47.3	12.2	11.6	7.8
16	Magnesium (Mg)	14.3	3.0	2.9	3.1
17	Iron (Fe) Total	0.13	.....	0.20	1.2
18	Dissolved	0.09	0.01	.....	.....
19	Manganese (Mn) Total	.....	0.00	0.00	.....
20	Dissolved	.....	.....	.....	.....
21	Aluminum (Al)	.....	0.07	.....	.....
22	Copper (Cu)	.....	0.0	.....	.....
23	Zinc (Zn)	.....	0.0	.....	.....
24	Sodium (Na)	8.5	1.7	1.7	
25	Potassium (K)	2.4	0.6	0.6	3.6 as Na
26	Ammonium (NH_4)	.....	0.05	.....	.....
27	Carbonate (CO_3)	11.5 (0.0)	0.0	0.0	0.0
28	Bicarbonate (HCO_3)	193 (215)	50.5	48.4	26.4
29	Sulphate (SO_4)	28.8	4.2	7.2	7.4
30	Chloride (Cl)	3.3 (3.3)	0.5	< 0.1	0
31	Fluoride (F)	0.15	0.0	0.04	.....
32	Phosphate (PO_4) Total	.....	.....	.....	.....
33	Dissolved	.....	.....	.....	.....
34	Nitrate (NO_3)	0.6	0.1	0.0	3.5
35	Silica (SiO_2), colorimetric	15	10	11	3.6
36	Carbonate hardness as $CaCO_3$	177	41.4	39.7	21.6
37	Non-carbonate hardness as $CaCO_3$	0.0	1.4	1.3	10.6
38	Total hardness as $CaCO_3$	177	42.8	41.0	32.2
39	Sum of constituents	244	49.1	59.3	42.0
40	Per cent sodium	9.3	7.8	8.1	.....
41	Saturation index at test temperature	+0.9	−0.5	−1.0	−2.6
42	Stability index at test temperature	6.7	9.2	9.7	12
43	Redox potential (mv)	.....	.....	−462	.....
44	Sodium absorption ratio	.....	.....	0.116	.....
	Remarks	* See also Table II, Station No. 40			

TABLE III– (Continued)

Chemical Analyses of Municipal Water Supplies

A – Hudson Bay Drainage Basin – Quebec (cont'd)

(In parts per million)

AMOS		BOURLAMAQUE			CHIBOUGAMAU	No.
Harricanaw River*		Wells and springs		Springs	Gilman (Dore) Lake Lac Gilman	
Raw and finished water		Raw and finished water			Raw and finished water	
At sump well		At sump well at plant		At town tap	At tap	
Apr. 6/59	Nov. 4/59	Aug. 20/47	Nov. 17/58	Oct. 18/63	Nov. 25/58	1
21:39	19:27	:420	14:17	12:20	20:41	2
9.4	17.0	5.8	.....	8.2	5.0	3
26.3	27.4	21.1	21.1	24.0	24.2	4
.....	.....	.....	1.2	.....	4.3	5
1	2	0.9 (5)	1	4	4	6
8.5	7.1	8.4 (7.7)	8.2	7.7	7.3	7
45	70	0 (5)	0	0	25	8
2	55	3	0	0	0	9
.....	.....	3.4	.....	.....	.....	10
.....	.....	0.2	.....	.....	.....	11
.....	.....	150	143	.....	64.8	12
.....	.....	50.0	16.4	.....	20.0	13
412	67.1	222	198	232	97.1	14
50.0	7.9	38.3	32.7	36.9	14.8	15
11.4	2.1	3.3	4.6	5.2	3.0	16
.....	1.8	0.02	.....	0.09	.....	17
.....	.....	0.02	0.01	.....	0.02	18
.....	.....	.....	0.03	0.00	0.00	19
.....	.....	.....	.....	.....	.....	20
.....	.....	.....	0.01	.....	0.00	21
0.0	.....	.....	0.03	.....	Trace	22
0.0	.....	.....	0.05	.....	0.02	23
17.0	1.6	3.5	2.4	2.8	0.6	24
16.8	1.0	1.5	1.0	1.1	0.2	25
0.0	0.1	.....	0.05	.....	0.0	26
0.0	0.0	5.5 (0.0)	0.0	0.0	0.0	27
250	17.2	126 (142)	115	130	51.8	28
16.2	16.5	8.2	9.3	11.4	5.6	29
2.4	1.5	0	0.7	0.4	1.5	30
.....	.....	0.1	0.0	0.1	0.0	31
0.0	.....	.....	.....	.....	.....	32
.....	.....	.....	.....	.....	.....	33
1.0	0.1	0.4	0.1	0.2	0.1	34
11	3.4	17	15	16	3.8	35
172	14.1	109	94.6	107	42.5	36
0.0	14.2	0.0	5.9	7.0	6.8	37
172	28.3	109	101	114	49.3	38
238	42.6	140	123	138	55.3	39
16	11	6.4	4.9	5.0	2.6	40
+1.1	−2.1	+0.5	+0.2	−0.1	−1.3	41
6.3	11	7.4	7.8	7.9	9.9	42
.....	.....	.....	.....	−466	.....	43
.....	.....	.....	.....	0.112	.....	44

TABLE III – (Continued)

Chemical Analyses of Municipal Water Supplies

A – Hudson Bay Drainage Basin – Quebec (cont'd)

(In parts per million)

	Municipality	CHIBOUGAMAU		DUPARQUET	
	Source(s)	Gilman Lake		Lake Duparquet	
		Raw water	Finished water	Raw water	Finished water
	Sampling point		At City Hall	At mill intake	At mill tap
1	Date of sampling	Aug. 9/65	Aug. 9/65	Aug. 26/47	Aug. 26/47
2	Storage period (days)	23:29	18:29	309	420
3	Sampling temperature, °C.			22.8	23.0
4	Test tempearture, °C.	23.3	23.3		19.1
5	Oxygen consumed by $KMnO_4$	5.6	5.5		
6	Carbon dioxide (CO_2), (calculated)	2	2	1 (2.5)	0.7 (3.0)
7	pH	7.6	7.6	7.8 (7.5)	8.0 (7.1)
8	Colour	75	75	40 (70)	0 (10)
9	Turbidity	0	0	15 (15)	3 (<5)
10	Suspended matter, dried at 105°C.				
11	Suspended matter, ignited at 550°C.				
12	Residue on evaporation, dried at 105°C.	67.2	65.2	67.6	93.0
13	Ignition loss at 550°C.	34.8	28.0	14.4	16.8
14	Specific conductance, micromhos at 25°C.	95.4	95.6	94.1	141
15	Calcium (Ca)	15.1	15.2	12.8	18.0
16	Magnesium (Mg)	2.7	2.6	4.4	3.4
17	Iron (Fe) Total				
18	Dissolved	0.02	0.02	0.01	0.01
19	Manganese (Mn) Total	0.00	0.00		
20	Dissolved	0.00	0.00		
21	Aluminum (Al)	0.00	0.01		
22	Copper (Cu)				
23	Zinc (Zn)				
24	Sodium (Na)	0.7	0.7		2.3
25	Potassium (K)	0.3	0.2		1.4
26	Ammonium (NH_4)				
27	Carbonate (CO_3)	0.0	0.0	0.0 (0.0)	0.0
28	Bicarbonate (HCO_3)	48.9	48.8	41.5 (39.0)	37.8
29	Sulphate (SO_4)	7.2	6.8	11.8	36.7
30	Chloride (Cl)	1.0	1.0	0	1.0
31	Fluoride (F)	0.08	0.08		0.05
32	Phosphate (PO_4) Total	<0.1	<0.1		
33	Dissolved				
34	Nitrate (NO_3)	0.0	0.0	3.5	0.0
35	Silica (SiO_2), colorimetric	2.8	2.9	5.2	3.0
36	Carbonate hardness as $CaCO_3$	48.6	48.8	34.0	31.0
37	Non-carbonate hardness as $CaCO_3$	8.5	8.8	16.0	27.8
38	Total hardness as $CaCO_3$	48.6	48.8	50.0	58.8
39	Sum of constituents	53.9	53.5		84.5
40	Per cent sodium	3.0	3.0		7.6
41	Saturation index at test temperature	−1.0	−1.0	1.0	−0.8
42	Stability index at test temperature	9.6	9.6	9.8	9.6
43	Redox potential (mv)				
44	Sodium absorption ratio	0.04	0.04		
	Remarks				

TABLE III– (Continued)

Chemical Analyses of Municipal Water Supplies

A – Hudson Bay Drainage Basin – Quebec (cont'd)

(In parts per million)

DUPARQUET		FORT GEORGE	GREAT WHALE	HALET TOWNSITE (MALARTIC)			
Well		Fort George River	Great Whale River	Piche River			
Raw and finished water		Raw and finished water	Raw and finished water	Raw water	Finished water		
At tap	At town tap	Direct from river	Direct from river	At plant intake	At plant tap	At pressure tank	
June 15/59	Oct. 16/63	Aug. 24/60	Aug. 24/60	Aug. 10/59	June 13/59	Aug. 10/59	1
51:58	56:103	33:40	33:40	11:16	25:34	11:16	2
.....	9.4	15.0	12.2	21.1	.....	21.1	3
27.1	23.1	22.3	22.5	27.4	25.2	27.4	4
1.9	.....	6.4	6.4	9.1	1.0	5.2	5
0.8	4	3	3	2.5	0	0	6
8.3	8.0	6.3	5.9	6.4	9.6	9.1	7
5	0	35	30	35	25	15	8
0	0	1	0.8	5	2	0.8	9
.....	.....	.....	.....	29.2	.....	.....	10
.....	.....	.....	.....	25.8	.....	.....	11
.....	.....	.....	.....	44.0	244	236	12
.....	.....	.....	.....	18.4	25.6	21.6	13
557	518	13.8	19.7	34.1	380	385	14
83.9	51.2	1.5	1.5	2.9	2.8	2.5	15
29.3	31.3	0.3	0.3	1.2	0.6	1.0	16
0.09	0.02	0.18	0.14	0.69	0.41	0.09	17
0.09	.....	0.06	0.04	0.02	0.19	0.06	18
0.00	0.00	0.00	0.00	0.00	0.00	0.00	19
.....	.....	.....	.....	.....	.....	.....	20
0.17	.....	0.0	0.03	0.0	4.0	2.5	21
0.0	.....	0.0	0.00	0.00	0.00	Trace	22
0.5	.....	0.00	0.00	0.05	0.00	0.00	23
12.0	10.0	0.6	0.6	0.9	80.8	79.7	24
1.6	1.8	0.3	0.3	0.7	0.7	0.8	25
0.0	.....	.....	.....	0.1	0.0	0.0	26
0.0	0.0	0.0	0.0	0.0	38.6	23	27
384	257	3.7	1.6	4.3	96.1	128	28
35.5	59.4	1.7	2.2	11.0	42.5	39.0	29
4.8	4.1	0.5	2.2	0.8	2.4	1.8	30
0.00	0.09	0.0	0.0	0.0	1.0	1.1	31
0.01	3.4	.....	.....	0.01	.....	0.01	32
.....	.....	.....	.....	.....	.....	.....	33
3.0	3.4	Trace	0.0	0.0	0.0	0.1	34
12	14	2.4	1.6	4.0	4.3	4.5	35
315	211	3.0	1.3	3.5	9.5	10.4	36
15.0	45.5	2.0	3.7	8.7	0.0	0.0	37
300	257	5.0	5.0	12.2	9.5	10.4	38
372	302	9.2	9.5	23.7	227	219	39
7.3	7.8	19	19	13	88	88	40
+1.3	+0.6	−4.4	−5.2	−3.9	+0.8	+0.3	41
5.7	6.8	15	16	14	8.0	8.5	42
.....	−468	.....	.....	.....	.....	.....	43
.....	0.27	.....	.....	.....	.....	.....	44
		See Table II, Station No. 8	*See* Table II Station No. 5				

TABLE III – (Continued)

Chemical Analyses of Municipal Water Supplies

A – Hudson Bay Drainage Basin – Quebec (cont'd)

(In parts per million)

No.	Municipality	LA SARR			MACAMI
	Source(s)	Deep well			Lois River
		Raw and finished water			Raw and finished water
	Sampling point	At hotel tap	At town tap		At tap
1	Date of sampling	Aug. 25/47	June 15/59	Oct. 17/63	June 15/59
2	Storage period (days)	:330	55:58	14:41	24:44
3	Sampling temperature, °C.	8.0	.....	19.2	17.0
4	Test temperature, °C.	.....	25.0	24.1	23.4
5	Oxygen consumed by $KMnO_4$	.....	2.3	.....	15
6	Carbon dioxide (CO_2), (calculated)	6 (12)	3.5	5	6
7	pH	8.0 (7.6)	8.1	7.9	6.8
8	Colour	20 (15)	5	0	120*
9	Turbidity	Clear	0	0	20*
10	Suspended matter, dried at 105°C.	.....	.....	.....	26*
11	Suspended matter, ignited at 550°C.	.....	.....	.....	1.8
12	Residue on evaporation, dried at 105°C.	337	260	.....	77.6
13	Ignition loss at 550°C.	36.2	30.0	.....	44.8
14	Specific conductance, micrombos at 25°C.	564	429	422.3	70.9
15	Calcium (Ca)	64.8	62.4	58.9	9.9
16	Magnesium (Mg)	25.8	16.0	16.7	2.2
17	Iron (Fe) Total	.....	0.09	0.11	1.8
18	Dissolved	0.04	0.04	.....	0.28
19	Manganese (Mn) Total	.....	0.00	0.03	0.00
20	Dissolved	.....	.....	.....	.....
21	Aluminum (Al)	.....	0.2	.....	0.06
22	Copper (Cu)	.....	Trace	.....	Trace
23	Zinc (Zn)	.....	0.3	7.1	0.05
24	Sodium (Na)	24.0	7.5	1.9	1.2
25	Potassium(K)	3.5	1.7	.....	0.8
26	Ammonium (NH_4)	.....	0.0	0.0	.....
27	Carbonate (CO_3)	0.0	0.0	0.0	0.0
28	Bicarbonate (HCO_3)	364	273	262	26.2
29	Sulphate (SO_4)	1.3	10.6	11.3	9.7
30	Chloride (Cl)	0.6	2.4	2.1	1.9
31	Fluoride (F)	.....	0.0	0.11	0.0
32	Phosphate (PO_4) Total	.....	0.07	.....	.....
33	Dissolved	.....	.....	.....	.....
34	Nitrate (NO_3)	7.9	1.0	1.0	0.0
35	Silica (SiO_2), colorimetric	25	14	16	2.6
36	Carbonate hardness as $CaCO_3$	268	222	215	21.5
37	Non-carbonate hardness as $CaCO_3$	0.0	0.0	1.3	12.2
38	Total hardness as $CaCO_3$	268	222	216	33.7
39	Sum of constituents	332	250	243	41.5
40	Per cent sodium	16	6.7	6.6	6.9
41	Saturation index at test temperature	+0.8	+0.8	+0.6	−2.2
42	Stability index at test temperature	6.4	6.5	6.7	11
43	Redox potential (mv)	.....	.....	−472	.....
44	Sodium absorption ratio	.....	.....	0.210	.....
	Remarks				† precipitated iron oxides

TABLE III – (Continued)

Chemical Analyses of Municipal Water Supplies

A – Hudson Bay Drainage Basin – Quebec (cont'd)

(In parts per million)

MACAMI (concl'd)	MALARTIC					No.
Lois River	Malartic River (Milhaut Lake)					
Raw and finished water	Raw water			Finished water		
At town tap	At plant intake			At water plant tap		
Oct. 17/63	Aug. 19/47	Nov. 18/58	June 13/59	Aug. 19/47	Nov. 18/58	1
25:102	:324	3:15	23:30	:336	3:15	2
13.3	19.2	.....	15.0	22.8	.....	3
23.1	.....	24.3	25.0	.....	24.4	4
.....	.....	20.0	17.6	.....	.....	5
2	0.8 (8)	2.5	8	1.5 (7)	1	6
7.4	7.2 (5.9)	5.9	5.7	7.2 (7.1)	7.7	7
70	75 (125)	140	120	8 (<5)	35	8
25	.....	5	4	Clear	.....	9
.....	.....	12.0	7.5	.....	.....	10
.....	.....	7.6	1.0	.....	.....	11
.....	32.8	69.6	58.0	111	124	12
.....	11.0	39.2	30.4	13.8	23.6	13
94.8	29.9	46.9	39.2	170	156	14
11.9	2.4	3.6	3.5	20.0	3.5	15
3.1	1.5	1.4	1.6	3.1	1.3	16
1.7	0.46	.....	0.98	.....	.....	17
.....	.....	0.61	0.37	0.03	0.17	18
0.00	.....	0.02	0.00	.....	0.05	19
.....	.....	.....	.....	.....	.....	20
.....	.....	0.0	0.0	.....	0.94 (0.2)†	21
.....	.....	0.00	0.00	.....	0.00	22
1.4	.....	0.10	0.2	.....	0.00	23
0.7	.....	0.8	0.9	6.0	25.0	24
.....	.....	0.7	0.6	1.5	0.7	25
0.0	.....	.....	.....	.....	0.25	26
0.0	0.0 (0)	0.0	0.0	0.0 (0)	0.0	27
31.2	7.8 (7.2)	1.2	2.4	14.6 (17.1)	38.8	28
15.2	5.9	13.8	11.1	58.9	36.3	29
1.8	.....	1.3	1.8	.....	2.1	30
0.13	.....	0.0	0.0	0.1	0.0	31
.....	.....	.....	.....	.....	.....	32
.....	.....	.....	.....	.....	.....	33
0.1	3.5	0.2	0.2	3.5	0.2	34
3.7	2.8	6.3	3.7	2.4	4.8	35
25.6	6.4 (6.0)	1.0	2.0	12.0	14.1	36
16.9	5.8	13.3	13.3	50.7	0.0	37
42.5	12.2	14.3	15.3	62.7	14.1	38
53.4	.....	29.3	25.2	102	93.4	39
6.6	.....	9.4	10	17	77	40
−1.5	−2.9	−4.9	−4.8	−1.8	−1.7	41
10	13	16	15	11	11	42
−466	.....	.....	.....	.....	.....	43
0.094	.....	.....	.....	.....	.....	44

†after filtration

TABLE III– (Continued)

Chemical Analyses of Municipal Water Supplies

A – Hudson Bay Drainage Basin – Quebec (cont'd)

(In parts per million)

No.	Municipality	MALARTIC (concl'd)			NORMETAL
	Source(s)	Malartic River and well			Calamite River
		Malartic River (Milhaut Lake)		Well	Raw and finished water
		Finished water		Raw & finished water	
	Sampling point	At water plant tap	At town tap	At pump	At tap
1	Date of sampling	June 13/59	Oct. 17/63	June 13/59	Oct. 16/63
2	Storage period (days)	23:30	53:102	23:30	14:19
3	Sampling temperature, °C.	15.0	13.9	10.0	11.1
4	Test temperature, °C.	24.8	23.5	25.0	23.9
5	Oxygen consumed by $KMnO_4$	4.2		0.8	
6	Carbon dioxide (CO_2), (calculated)	2	1	3	5
7	pH	7.3	7.2	7.7	6.9
8	Colour	15	10	5	7.5
9	Turbidity	0	1	0	1
10	Suspended matter, dried at 105°C.				
11	Suspended matter, ignited at 550°C.				
12	Residue on evaporation, dried at 105°C.	78.0		125	88.0
13	Ignition loss at 550°C.	4.8		19.6	41.6
14	Specific conductance, micromhos at 25°C.	114	121	180	86.7
15	Calcium (Ca)	5.6	4.5	24.8	10.4
16	Magnesium (Mg)	1.1	2.0	5.6	2.6
17	Iron (Fe) Total	0.17	0.08	0.19	0.87
18	Dissolved	0.05		0.00	0.40
19	Manganese (Mn) Total	0.02	0.04	0.00	0.00
20	Dissolved				0.00
21	Aluminum (Al)	0.73 (0.3)†		0.04	0.0
22	Copper (Cu)	0.0		0.0	0.01
23	Zinc (Zn)	0.0		0.0	0.19
24	Sodium (Na)	15.0	14.2	3.4	1.6
25	Potassium (K)	0.7	0.5	1.8	0.5
26	Ammonium (NH_4)	0.2		0.0	0.2
27	Carbonate (CO_3)	0.0	0.0	0.0	0.0
28	Bicarbonate (HCO_3)	25.1	15.1	95.6	23.2
29	Sulphate (SO_4)	27.5	36.9	13.6	14.7
30	Chloride (Cl)	1.9	1.5	1.0	2.4
31	Fluoride (F)	0.0	0.12	0.0	0.17
32	Phosphate (PO_4) Total			0.05	
33	Dissolved				
34	Nitrate (NO_3)	0.1	0.1	0.2	0.1
35	Silica (SiO_2), colorimetric	3.9	5.8	15	3.9
36	Carbonate hardness as $CaCO_3$	18.5	12.4	78.4	19.0
37	Non-carbonate hardness as $CaCO_3$	0.0	7.0	6.5	17.7
38	Total hardness as $CaCO_3$	18·5	19.4	84.9	36.7
39	Sum of constituents	68.6	73.1	11.3	47.4
40	Per cent sodium	60	6.1	7.8	8.5
41	Saturation index at test temperature	−2.0	−2.4	−0.5	−2.1
42	Stability index at test temperature	11	11	8.7	11
43	Redox potential (mv)		−506		−486
44	Sodium absorption ratio		1.40		0.116
	Remarks				

TABLE III– (Continued)

Chemical Analyses of Municipal Water Supplies

A – Hudson Bay Drainage Basin – Quebec (cont'd)

(In parts per million)

QUEBEC LITHIUM TOWNSITE		SENNETERRE		SULLIVAN	VAL d'OR	
Roy Lake		Springs			Springs	
Raw water	Finished water	Raw and finished water			Raw and finished water	
At intake	At townsite tap	At town tap			At pump	
Sept. 9/59	Sept. 9/59	June 12/59	Oct. 17/63		Aug. 20/47	1
6:35	6:35	21:31	53:102		:412	2
21.0	.....	12.0	11.1		7.0	3
20.3	20.4	25.6	23.5		21.9	4
12.5	11.7	6|6	.....		.....	5
6	3.5	3	1		0.7 (1)	6
6.2	6.4	7.1	7.6		8.3 (8.1)	7
50	60	50	5		1 (<5)	8
1	0.8	2	0		.....	9
.....	.....	.....	.....		.....	10
.....	.....	.....	.....		.....	11
42.4	37.6	51.2	.....		95.0	12
14.4	16.4	28.0	.....		20.8	13
39.1	36.8	49.0	50.4		138	14
2.6	2.5	5.8	6.1		22.4	15
0.7	0.8	1.3	1.2		2.0	16
0.14	0.41	0.49	0.03		.....	17
0.04	0.11	0.21	.....	*See*	0.06	18
0.00	0.00	0.01	0.00	Val d'Or	.....	19
.....	.....	.....	.....		.....	20
0.0	0.0	0.0	.....		.....	21
Trace	Trace	0.14	.....		.....	22
0.0	0.5	0.3	.....		.....	23
2.8	2.6	1.7	1.7		3.7	24
1.3	0.6	0.7	1.0		1.3	25
0.5	0.3	0.0	.....		.....	26
0.0	0.0	0.0	0.0		0.0	27
5.5	5.1	25.5	27.1		78.0	28
9.8	9.8	3.8	4.2		7.6	29
2.3	1.8	1.6	<0.1		1.0	30
0.0	0.0	0.0	0.08		0.21	31
.....	.....	.....	.....		.....	32
.....	.....	.....	.....		.....	33
0.7	0.1	0.0	0.1		0.9	34
0.6	0.7	9.8	15		14	35
4.5	4.2	19.8	20.3		64.0	36
4.9	5.3	0.0	0 0		0.0	37
9.4	9.5	19.8	20.3		64.0	38
23.3	22.0	37.9	42.2		91.2	39
35	35	14	15		11	40
–4.1	–4.0	–2.1	–1.6		0.0	41
14	14	11	11		8.3	42
.....	.....	.....	–492		.....	43
.....	.....	.....	0.164		.....	44
				* A mine townsite	Dissolved oxygen 9.9 ppm	

TABLE III – (Continued)

Chemical Analyses of Municipal Water Supplies

A – Hudson Bay Drainage Basin – Quebec (concl'd)

(In parts per million)

No.	Municipality	VAL d'OR			
	Source(s)	Springs			
		Raw and finished water			
	Sampling point	At town tap	At town tap	At tap at Sullivan (Mines) Townsite	At tap in former Sigma townsite area
1	Date of sampling	June 13/59	Oct. 17/63	June 14/59	Oct. 17/63
2	Storage period (days)	25:34	25:102	25:45	13:21
3	Sampling temperature, °C.	12.0	8.1	.....	13.3
4	Test temperature, °C.	25.2	23.2	26.9	23.8
5	Oxygen consumed by $KMnO_4$	9.8	.....	1.3	.....
6	Carbon dioxide (CO_2), (calculated)	6	2	2.5	1.5
7	pH	7.3	7.8	7.7	7.9
8	Colour	5	0	5	0
9	Turbidity	0.7	0	0.7	0
10	Suspended matter, dried at 105°C.	.....	.....	.....	.....
11	Suspended matter, ignited at 550°C.	.....	.....	.....	.....
12	Residue on evaporation, dried at 105°C.	97.6	.....	99.6	.....
13	Ignition loss at 550°C.	20.0	.....	12.8	.....
14	Specific conductance, micromhos at 25°C.	143	156	141	155
15	Calcium (Ca)	22.2	23.0	22.2	22.9
16	Magnesium (Mg)	2.7	3.1	2.7	2.9
17	Iron (Fe) Total	0.18	0.05	0.34	0.02
18	Dissolved	0.00	.....	0.05	.....
19	Manganese (Mn) Total	0.00	0.00	0.00	0.00
20	Dissolved	.....	.....	.....	.....
21	Aluminum (Al)	0.11	.....	0.14	.....
22	Copper (Cu)	0.0	.....	0.0	.....
23	Zinc (Zn)	0.0	.....	0.05	.....
24	Sodium (Na)	2.3	2.7	2.5	2.6
25	Potassium (K)	1.0	1.0	1.0	1.0
26	Ammonium (NH_4)	.....	.....	0.0	.....
27	Carbonate (CO_3)	0.0	0.0	0.0	0.0
28	Bicarbonate (HCO_3)	73.7	75.2	74.8	75.1
29	Sulphate (SO_4)	8.0	9.0	8.1	11.1
30	Chloride (Cl)	2.1	3.8	2.3	3.2
31	Fluoride (F)	0.0	0.07	0.0	0.05
32	Phosphate (PO_4) Total	0.05	.....	.....	.....
33	Dissolved	.....	.....	.....	.....
34	Nitrate (NO_3)	0.3	0.6	0.4	1.6
35	Silica (SiO_2), colorimetric	11	14	12	13
36	Carbonate hardness as $CaCO_3$	60.5	61.7	61.4	61.6
37	Non-carbonate hardness as $CaCO_3$	6.0	8.1	5.1	7.6
38	Total hardness as $CaCO_3$	66.5	69.8	66.5	69.2
39	Sum of constituents	86.7	94.7	88.2	95.3
40	Per cent sodium	6.7	7.6	7.3	7.4
41	Saturation index at test temperature	−1.0	−0.5	−0.5	−0.4
42	Stability index at test temperature	9.3	8.8	8.7	8.7
43	Redox potential (mv)	.....	−462	.....	−452
44	Sodium absorption ratio	.....	0.140	.....	0.136
	Remarks				

TABLE III – (Continued)

Chemical Analyses of Municipal Water Supplies

A – Hudson Bay Drainage Basin – Ontario

(In parts per million)

ANSONVILLE	BLACK RIVER TOWNSHIP	CALVERT TOWNSHIP	CHAPLEAU	COCHRANE		No.
			Kebsquasheshing Lake	Wells		
			Raw and finished water	Well No. 3		
				Raw water		
			At town tap	At well pump		
			Aug. 8/58	Dec. 16/57	Mar. 14/58	1
			90:187	21:28	4:10	2
			18.9	4.4	6.0	3
			25.8 (19.2)	24.6	21.6	4
			11.5	3.7	3.2	5
			1	4	9	6
			7.7 (7.4)	8.2	7.9	7
			60 (100)	5	35	8
			1	7	15	9
			.....	6.7	7.4	10
			.....	4.9	1.8	11
			91.2	347	370	12
			32.8	52.0	36.8	13
			84.4	569	617	14
			11.6	95.3	98.0	15
			2.5	21.3	20.0	16
			.....	1.7	1.6	17
			0.04	0.16	0.36	18
See Iroquois Falls, Ont.	*See* Matheson, Ont.	*See* Iroquois Falls, Ont.	0.00	0.01	0.07	19
			.....	.....	.....	20
			0.0	0.11	0.02	21
			Trace	0.0	0.0	22
			0.2	0.0	0.0	23
			2.1	8.3	8.0	24
			0.6	2.6	2.5	25
			0.1	0.0	.....	26
			0.0	0.0	0.0	27
			37.1	404	411	28
			5.9	3.1	4.6	29
			2.0	9.4	8.9	30
			0.0	0.1	0.0	31
			.....	.....	.....	32
			.....	.....	.....	33
			0.7	0.4	0.6	34
			4.9	14	15	35
			30.4	325	327	36
			8.8	0.0	0.0	37
			39.2 (42.8)	325	327	38
			48.8	353	360	39
			10	5.2	5.0	40
			−1.1	+1.2	+0.9	41
			9.9	5.8	6.1	42
			.....	.....	.....	43
			.....	.....	.....	44
				Static level, −12'		

TABLE III– (Continued)

Chemical Analyses of Municipal Water Supplies

A – Hudson Bay Drainage Basin – Ontario (cont'd)

(In parts per million)

	Municipality	COCHRANE (cont'd)			
	[illegible]	Wells			
		Well No. 3			
		Raw water			
	Sampling point	At well pump			
1	Date of sampling	May 14/58	Sept. 22/58	Dec. 16/58	Oct. 13/59
2	Storage period (days)	9:14	8:24	14:27	8:30
3	Sampling temperature, °C.	4.4	6.1	4.4	5.6
4	Test temperature, °C.	21.6	23.6	23.0	25.4
5	Oxygen consumed by $KMnO_4$	4.0			
6	Carbon dioxide (CO_2), (calculated)	8	10	12	5
7	pH	7.9	7.8	7.7	8.1
8	[illegible]	10	[illegible]	[illegible]	[illegible]
9	Turbidity	9	7	9	8
10	Suspended matter, dried at 105°C.				17
11	Suspended matter, ignited at 550°C.				11
12	Residue on evaporation, dried at 105°C.	392	361	366	357
13	Ignitionlloss at 550°C.	46.4	58.8	42.8	45.6
14	Specific conductance, micrombos at 25°C.	613	620	621	622
15	Calcium (Ca)	97.9	96.9	96.1	99.3
16	Magnesium (Mg)	21.2	21.5	22.7	21.5
17	Iron (Fe) Total	1.6	0.49	2.9	1.6
18	Dissolved	0.54	0.21	0.17	0.04
19	Manganese (Mn) Total	0.01	0.02	0.01	0.00
20	Dissolved				
21	Aluminum (Al)	0.06	0.05	0.06	0.17
22	Copper (Cu)	0.0	0.0	0.0	0.0
23	Zinc (Zn)	0.0	0.05	0.0	0.0
24	Sodium (Na)	8.1	7.9	7.3	7.5
25	Potassium (K)	2.5	2.5	2.3	2.4
26	Ammonium (NH_4)		0.15	0.0	0.1
27	Carbonate (CO_3)	0.0	0.0	0.0	0.0
28	Bicarbonate (HCO_3)	406	399	403	402
29	Sulphate (SO_4)	4.6	4.6	6.7	5.9
30	Chloride (Cl)	8.3	9.7	9.9	9.8
31	Fluoride (F)	0.0	0.0	0.0	0.0
32	Phosphate (PO_4) Total				0.08
33	Dissolved				
34	Nitrate (NO_3)	0.3	0.1	0.1	0.0
35	Silica (SiO_2), colorimetric	15	14	14	15
36	Carbonate hardness as $CaCO_3$	331	327	331	330
37	Non-carbonate hardness as $CaCO_3$	0.0	2.6	2.4	6.4
38	Total hardness as $CaCO_3$	331	330	333	336
39	Sum of constituents	359	355	358	360
40	Per cent sodium	5.0	4.9	4.5	4.6
41	Saturation index at test temperature	+0.9	+0.8	+0.8	+1.1
42	Stability index at test temperature	6.1	6.2	6.1	5.9
43	Redox potential (mv)		−531		
44	Sodium absorption ratio				
	Remarks	Static level −20'			Static level −18'

TABLE III– (Continued)

Chemical Analyses of Municipal Water Supplies

A – Hudson Bay Drainage Basin – Ontario (cont'd)

(In parts per million)

COCHRANE (cont'd)						
Wells						No.
Well No. 4			Mixed wells			
Raw water			Finished water			
At well pump			At well reservoir			
Mar. 10/59	July 20/59	Dec. 12/59	Aug. 11/57	Dec. 16/57	Mar. 14/58	1
3:21	4:9	22:30	88:120	21:28	4:10	2
5.6	4.4	4.4	18.2	7.2	6.8	3
25.4	28.7	23.7	25.0	24.8	21.8	4
3.0	4.3	.....	2.7	3.4	2.3	5
6	6	10	0.6	0.5	0.3	6
8.0	8.0	7.8	8.6 (8.7)	8.6	8.7	7
30	15	20	5	5	5	8
9	4	0.8	0	0	0	9
5.5 *	5.0*	.....	.....	.....	.....	10
0.4	3.3	.....	.....	.....	.....	11
368	374	.....	137	147	145	12
35.6	26.0	.....	11.2	28.8	39.2	13
627	632	647	253	266	246	14
99.3	99.8	102	16.0	17.8	15.0	15
24.8	24.6	22.9	19.0	18.3	17.3	16
1.7	1.1	2.1	.....	.....	.....	17
0.07	0.07	0.01	Trace	0.01	0.02	18
0.02	0.01	0.00	Trace	0.00	0.00	19
.....	.....	.....	.....	.....	.....	20
0.04	0.19	0.05	0.08	0.17	0.10	21
0.0	Trace	0.0	0.0	0.0	0.0	22
0.0	0.0	0.0	0.0	0.0	0.0	23
6.4	6.2	6.5	7.2	8.2	7.8	24
2.5	2.7	2.4	2.6	2.6	2.5	25
0.2	0.0	0.1	0.0	0.0	.....	26
0.0	0.0	0.0	4.0	3.4	6.8	27
410	411	423	136	141	119	28
8.0	8.1	6.5	9.0	8.3	9.6	29
7.1	8.5	8.9	7.8	9.4	8.2	30
0.1	0.0	0.0	0' 0	0.1	0.10	31
0.0	.....	0.05	.....	.....	.....	32
.....	.....	.....	.....	.....	.....	33
0.0	0.2	0.0	0.2	0.2	0.3	34
12	14	17	13	12	13	35
326	337	347	118 (104)	120	109	36
14.0	13.0	1.6	0.3 (13.9)	0.0	0.0	37
350	350	348	118 (118)	120	109	38
362	366	374	146	149	139	39
3.8	3.7	3.9	11	13	13	40
+1.0	+1.1	–0.1	+0.5	+0.5	+0.4	41
6.0	5.8	8.0	7.6	7.6	7.9	42
.....	.....	.....	.....	.....	.....	43
.....	.....	.....	.....	.....	.....	44
* Iron oxide precipitate					Static level –12'	

TABLE III– (Continued)

Chemical Analyses of Municipal Water Systems

A – Hudson Bay Drainage Basin – Ontario (cont'd)

(In parts per million)

	Municipality	COCHRANE (cont'd)			
	Source	Mixed wells			
		Finished water			
	Sampling point	At well reservoir			
1	Date of sampling	May 14/58	Sept. 22/58	Dec. 16/58	Mar. 10/59
2	Storage period (days)	9:14	8:24	14:27	3:21
3	Sampling temperature, °C.	5.6		4.4	6.1
4	Test temperature, °C.	21.6	23.4	27.8	25.2
5	Oxygen consumed by $KMnO_4$	3.2			2.4
6	Carbon dioxide (CO_2), (calculated)	0.4	0.5	0	1
7	pH	8.7	8.6	8.5	8.4
8	Colour	10	-	5	5
9	Turbidity	0.3	0	0	0
10	Suspended matter, dried at 105°C.				
11	Suspended matter, ignited at 550°C.				
12	Residue on evaporation, dried at 105°C.	154	155	174	175
13	Ignition loss at 550°C.	49.2	42.8	39.6	36.8
14	Specific conductance, micromhos at 25°C.	249	254	296	286
15	Calcium (Ca)	15.4	16.9	22.9	24.5
16	Magnesium (Mg)	18.4	18.1	19.8	21.7
17	Iron (Fe) Total				
18	Dissolved	Trace	0.02	0.00	Trace
19	Manganese (Mn) Total	0.00	0.00	0.00	0.00
20	Dissolved				
21	Aluminum (Al)	0.06	0.10	0.08	0.11
22	Copper (Cu)	0.0	0.0	0.0	0.0
23	Zinc (Zn)	0.0	0.05	0.0	0.0
24	Sodium (Na)	7.3	7.9	7.3	6.4
25	Potassium (K)	2.5	2.5	2.3	2.5
26	Ammonium (NH_4)		0.2	0.1	0.2
27	Carbonate (CO_3)	5.0	5.8	4.9	2.4
28	Bicarbonate (HCO_3)	124	126	153	166
29	Sulphate (SO_4)	11.6	8.2	11.3	12.6
30	Chloride (Cl)	7.8	10.2	9.8	6.9
31	Fluoride (F)	0.0	0.1	0.0	0.1
32	Phosphate (PO_4) Total				0.0
33	Dissolved				
34	Nitrate (NO_3)	0.3	0.1	0.1	Trace
35	Silica (SiO_2), colorimetric	13	13	11	11
36	Carbonate hardness as $CaCO_3$	110	113	134	140
37	Non-carbonate hardness as $CaCO_3$	4.0	3.7	4.9	10.2
38	Total hardness as $CaCO_3$	114	117	139	150
39	Sum of constituents	142	145	165	157
40	Per cent sodium	12	13	10	8.3
41	Saturation index at test temperature	+0.4	+0.4	+0.6	+0.5
42	Stability index at test temperature	7.9	7.8	7.3	7.4
43	Redox potential (mv)		-483		
44	Sodium absorption ratio				
	Remarks	Static level –8"			

TABLE III– (Continued)

Chemical Analyses of Municipal Water Systems

A – Hudson Bay Drainage Basin – Ontario (cont'd)

(In parts per million)

COCHRANE (concl'd)					FOLEYET	No.
Mixed wells					Ivanhoe River	
Finished water					Raw and finished water	
At well reservoir			At town tap		At town tap	
July 20/59	Oct. 13/59	Dec. 21/59	Aug. 12/59	Oct. 13/63	Oct. 14/63	1
4:9	8:30	22:30	20:23	59:106	11:21	2
4.4	5.6	4.4	12.0	9.1	12.6	3
28.8	25.2	23.7	26.7	23.2	24·9	4
3.7	4·5	.....	3.9	.....	.....	5
1	0.5	2.5	1	1	3	6
8.3	8.6	8.0	8.3	8.3	7.6	7
5	5	0	5	0	50	8
0	0	0	0	0	0.5	9
.....	.....	.....	.....	.....	.....	10
.....	.....	.....	.....	.....	.....	11
181	156	.....	174	.....	118	12
42.0	42.4	.....	33.6	.....	44.8	13
301	256	302	296	278	158	14
24.2	15.9	26.5	23.3	18.5	21.8	15
19.9	18.9	18.7	19.3	19.4	6.0	16
0.06	0.09	0.0	0.02	0.02	0.28	17
0.06	0.00	0.00	0.02	.....	0.16	18
0.00	0.00	0.00	0.00	0.00	0.00	19
.....	.....	.....	.....	.....	.....	20
0.24	0.15	0.19	0.23	.....	0.01	21
0.0	0.0	0.0	Trace	.....	0.002	22
0.0	0.0	0.0	0.0	.....	0.41	23
6.7	7.5	7.4	7.1	7.7	2.5	24
2.8	2.4	2.4	2.7	2.6	0.6	25
0.1	0.2	0.2	0.1	0.0	.....	26
0.0	5.0	0.0	0.0	0.0	0.0	27
163	129	170	162	147	84.2	28
14·6	8.7	10.4	11.1	11.1	7.2	29
8.0	9.2	9.2	9.7	10.1	2.1	30
0.0	0.1	0.0	0.0	0.14	0.17	31
.....	Trace	Trace	.....	.....	.....	32
.....	.....	.....	.....	.....	.....	33
0.2	0.0	0.0	0.0	0.3	0.6	34
12	14	13	12	14	4.7	35
134	114.5	139	133	121	69.1	36
8.3	2.9	3.9	4.4	5.6	9.9	37
142	117	143	137	127	79.0	38
169	145	171	165	156	87.3	39
9.0	12	9.9	9.8	11.5	6.4	40
+0.5	+0.4	+0.1	+0.4	+0.2	−0.6	41
7.3	7.8	7.8	7.5	7.9	8.8	42
.....	.....	.....	.....	−497	−490	43
.....	.....	.....	.....	0.298	0.123	44

TABLE III – (Continued)

Chemical Analyses of Municipal Water Systems

A – Hudson Bay Drainage Basin – Ontario (cont'd)

(In parts per million)

	Municipality	GERALDTON			GLACKMEYER TOWNSHIP
	Source(s)	Reesor Lake			Wells, treated
		Raw and finished water			
	Sampling point	At town tap			
1	Date of sampling	Aug. 7/57	Aug. 14/59	Oct. 16/63	
2	Storage period (days)	70:130	26:40	15:14	
3	Sampling temperature, °C.	14.6	17.0	11.7	
4	Test temperature, °C.	23.2	27.0	25.0	
5	Oxygen consumed by $KMnO_4$		7.3		
6	Carbon dioxide (CO_2), (calculated)	2	3	3	
7	pH	8.0 (7.8)	7.9 (7.6)	7.9	
8	Colour	10 (35)	15 (35)	15	
9	Turbidity	1	2 (1)	0	
10	Suspended matter, dried at 105°C.				
11	Suspended matter, ignited at 550°C.				
12	Residue on evaporation, dried at 105°C.	142	159		
13	Ignition loss at 550°C.	35.6	30.8		
14	Specific conductance, micromhos at 25°C.	219.9	228.0	241.5	
15	Calcium (Ca)	37.0	37.9	41.0	
16	Magnesium (Mg)	5.2	6.3	5.9	
17	Iron (Fe) Total		0.07	0.11	
18	Dissolved	Trace	0.01		
19	Manganese (Mn) Total	0.0	0.01	0.00	*See* Cochrane
20	Dissolved				
21	Aluminum (Al)	0.01	0.02		
22	Copper (Cu)	Trace	0.34		
23	Zinc (Zn)	0.10	0.10		
24	Sodium (Na)	1.1	0.9	0.6	
25	Potassium (K)	0.3	0.5	0.4	
26	Ammonia (NH_4)	0.05	0.1		
27	Carbonate (CO_3)	0.0 (0)	0.0 (0)	0.0	
28	Bicarbonate (HCO_3)	130 (128)	132 (134)	141	
29	Sulphate (SO_4)	9.2	9.9	5.4	
30	Chloride (Cl)	1.5	1.2	3.0	
31	Fluoride (F)	0.0	0.0	0.08	
32	Phosphate (PO_4) Total				
33	Dissolved				
34	Nitrate (NO_3)	0.3	0.4	0.3	
35	Silica (SiO_2), colorimetric	2.1	3.4	2.1	
36	Carbonate hardness as $CaCO_3$	106	108	115	
37	Non-carbonate hardness as $CaCO_3$	7.5	12.1	12	
38	Total hardness as $CaCO_3$	114	121	127	
39	Sum of constituents	121	126	129	
40	Per cent sodium	2.0	1.6	1.0	
41	Saturation index at test temperature	+0.1	+0.1	+0.2	
42	Stability index at test temperature	7.8	7.7	7.5	
43	Redox potential (mv)			−491	
44	Sodium absorption ratio			0.023	
	Remarks				

TABLE III– (Continued)

Chemical Analyses of Municipal Water Systems

A – Hudson Bay Drainage Basin – Ontario (cont'd)

(In parts per million)

HEARST			IROQUOIS FALLS			No.
Mattawishkwia River		Johnson Lake	Abitibi River			
Raw and finished water		Raw and finished water	Raw water*		Finished water	
At town tap			At intake		At tap in Ansonville	
Aug. 8/57	Oct. 12/63	Aug. 13/59	Aug. 6/58	May 21/59	Aug. 12/57	1
89:106	60:107	22:41	27:30	26:34	87:11	2
17.6	11.1	15.0	18.9	7.8	.....	3
23.4	24.0	24.6	24.5	22.8	25.0	4
21.9	.....	8.2	.....	.....	2.6	5
4	3	2	3	3	2	6
7.4 (7.2)	7.4	8.0 (7.1)	7.5	7.5	7.7	7
140 (235)	100	20 (40)	225	80	5	8
10	0.7	0.8 (<1)	25	20	2	9
.....	.....	.....	7.7	.....	.....	10
.....	.....	.....	7.0	.....	.....	11
146	.....	114	122	.....	120	12
68.0	.....	31.2	46.4	.....	2.0	13
137	102	169	110	116	193	14
20.5	15.7	24.8	16.7	18.0	28.3	15
5.1	5.0	5.9	3.9	3.9	3.6	16
.....	0.63	0.07	0.92	.....	.....	17
0.24	.....	0.02	0.19	.....	Trace	18
Trace	0.00	0.00	0.00	.....	0.02	19
.....	.....	.....	.....	.....	.....	20
0.0	.....	0.03	0.0	.....	0.2	21
Trace	.....	Trace	0.0	.....	0.0	22
0.2	.....	0.0	0.1	.....	0.6	23
1.2	0.7	1.4	1.4	1.2	2.1	24
0.4	0.3	1.1	1.1	0.9	0.7	25
0.0	.....	0.1	.....	0.2	0.0	26
0.0	0.0	0.0	0.0	0.0	0.0	27
66.6	48.5	102	56.0	60.5	50.0	28
4.6	4.5	3.9	8.9	8.5	46.2	29
10.0	6.8	0.9	1.1	1.3	3.2	30
0.0	0.28	0.0	0.0	.....	0.0	31
.....	.....	.....	.....	.....	.....	32
.....	.....	.....	.....	.....	.....	33
0.2	0.8	0.8	0.6	0.8	0.5	34
3.5	3.0	4.3	4.2	5.1	4.0	35
54.6	34.8	83.4	45.9	49.6	41.0	36
17.5	20.1	2.7	11.8	11.3	44.4	37
72.1	59.9	86.1	57.7	60.9	85.4	38
78.7	61.0	93.3	65.7	69.5	114	39
3.4	2.4	3.4	4.9	4.0	4.9	40
-1.0	-1.2	-0.1	-1.0	-1.0	-0.7	41
9.4	9.8	8.2	9.5	9.5	9.1	42
.....	-538	.....	-<14	.....	.....	43
.....	0.39	.....	.....	.....	.....	44

* *See* also Table II, Station No. 49

TABLE III– (Continued)

Chemical Analyses of Municipal Water Systems

A – Hudson Bay Drainage Basin – Ontario (cont'd)

(In parts per million)

No.	Municipality	IROQUOIS FALLS (concl'd)		KAPUSKASING	
	Source(s)	Abitibi River		Kapuskasing River	
		Finished water		Raw water*	
	Sampling point	At tap in Ansonville		At intake to plant	At intake to plant
1	Date of sampling	Aug. 12/59	Oct. 16/63	Aug. 9/57	Aug. 13/59
2	Storage period (days)	20:32	56:103	88:101	22:28
3	Sampling temperature, °C.	14.0	12.7	21.8	20.0
4	Test temperature, °C.	26.6	23.3	25.6	24.8
5	Oxygen consumed by $KMnO_4$	3.6			14.3
6	Carbon dioxide (CO_2), (calculated)	1.5	1	4	7
7	pH	7.7 (7.4)	7.8	7.5 (7.1)	7.3 (7.3)
8	Colour	5 (5)	5	70 (165)	65 (70)
9	Turbidity	3 (<1)	2	3	1 (7)
10	Suspended matter, dried at 105°C.				
11	Suspended matter, ignited at 550°C.				
12	Residue on evaporation, dried at 105°C.	154			119
13	Ignition loss at 550°C.	37.6			38.8
14	Specific conductance, micrombos at 25°C.	203	226	137	160
15	Calcium (Ca)	29.6	30.6	20.7	24.3
16	Magnesium (Mg)	4.4	6.2	4.6	5.4
17	Iron (Fe) Total	0.27	0.14		0.12
18	Dissolved	0.12			0.04
19	Manganese (Mn) Total	0.02	0.00		0.00
20	Dissolved				
21	Aluminum (Al)	0.24			0.0
22	Copper (Cu)	0.01			Trace
23	Zinc (Zn)	0.05			0.1
24	Sodium (Na)	1.4	2.7	1.1	1.1
25	Potassium (K)	0.9	0.8	0·8	1.1
26	Ammonium (NH_4)	0.4		0.1	0.2
27	Carbonate (CO_3)	0.0	0.0	0.0 (0)	0.0
28	Bicarbonate (HCO_3)	50.0	54.7	76.9 (76)	93.4
29	Sulphate (SO_4)	45.4	59.3	6.8	5.5
30	Chloride (Cl)	3.2	2.4	1.5	0.2
31	Fluoride (F)	0.0	0.10		0.0
32	Phosphate (PO_4) Total				
33	Dissolved				
34	Nitrate (NO_3)	0.3	0.9	0.3	3.0
35	Silica (SiO_2), colorimetric	2.2	4.8	4.3	3·4
36	Carbonate hardness as $CaCO_3$	41.0	44.9	63.1	76.6
37	Non-carbonate hardness as $CaCO_3$	50.9	57.2	7.5	6.2
38	Total hardness as $CaCO_3$	91.9	102	70.6 (75.6)	82.8
39	Sum of constituents	112	135	78.1	90.1
40	Per cent sodium	3.2	5.4	3.2	2.8
41	Saturation index at test temperature	−0.6	−0.5	−0·8	−0.8
42	Stability index at test temperature	8.9	8.8	9.1	8.9
43	Redox potential (mv)		−468		
44	Sodium absorption ratio		0.116		

Remarks:

* *See* also Table II, Station No. 81

TABLE III– (Continued)

Chemical Analyses of Municipal Water Systems

A – Hudson Bay Drainage Basin – Ontario (cont'd)

(In parts per million)

KAPUSKASING (concl'd)			KENDALL	KENDREY TOWNSHIP	LAKEVIEW	LONGLAC	
Kapuskasing River						Long Lake	
Finished water		Raw and finished water				Raw water *	
At plant tap		At town tap				Direct from lake	
Aug. 9/57	Aug. 13/59	Oct. 12/63				May 21/58	1
88:122	22:28	13:17				52:19	2
21.2	.....	13.3				1.1	3
23.3	24.7	24.8				24.7	4
4.1	5.5	.....				10.2	5
3	4	2				3	6
7.6 (7.4)	7.5	7.7				7.8	7
10	10	10				45	8
0	0	0				0.9	9
.....	.....	.....				.....	10
.....	.....	.....				.....	11
151	158	.....				144	12
12.0	43.2	.....				29.2	13
242	256	241				198	14
37.9	36.0	35.1				32.0	15
5.4	6.3	6.3				6.1	16
.....	0.00	0.06				.....	17
0.00	0.00	.....				0.03	18
0.01	0.01	0.00	*See* Hearst	*See* Smooth Rock Falls	*See* Porcupine and South Porcupine	0.00	19
.....	.....	.....				.....	20
0.09	0.07	.....				0.00	21
0.0	Trace	.....				0.0	22
0.0	0.0	.....				0.0	23
1.3	1.8	1.7				1.0	24
0.8	1.1	0.8				0.8	25
0.0	0.1	.....				0.1	26
0.0 (0)	0.0	0.0				0.0	27
73.9 (73.7	86.5	67.8				119	28
55.4	43.2	55.0				4.3	29
2.2	0.8	1.7				1.4	30
0.0	0.0	0.10				0.0	31
.....	.....	.....				.....	32
.....	.....	.....				.....	33
0.1	0.0	0.3				0.5	34
4.2	3.2	3.4				6.4	35
60.6	71.0	55.6				97.7	36
56.2	44.7	58.0				7.2	37
117	116	114				105	38
144	134	138				111	39
2.3	3.2	3.1				2.0	40
–0.5	–0.5	–0.4				–0.1	41
8.6	8.5	8.5				8.1	42
.....	.....	–484				.....	43
.....	.....	0.070				.....	44

*See also Table II, Station No. 97

TABLE III– (Continued)

Chemical Analyses of Municipal Water Systems

A – Hudson Bay Drainage Basin – Ontario (cont'd)

(In parts per million)

No.	Municipality	LONGLAC (concl'd)			MATHESON	MATTAGAMI HEIGHTS
	Source(s)	Long Lake			Spring-fed lake	Mattagami River and deep well
		Raw water*	Finished water		Raw and finished water	Raw and finished water
	Sampling point	Direct from lake	At town tap		At town tap	At garage tap
1	Date of sampling	Aug. 13/59	Aug. 16/59	Oct. 11/63	Aug. 11/59	Oct. 15/63
2	Storage period (days)	26:41	33:66	59:108	20:24	55:90
3	Sampling temperature, °C.	21.1	18	10.8	12	11.4
4	Test temperature, °C.	26.8	26.6	24.1	27.4	23.4
5	Oxygen consumed by $KMnO_4$	11.6	11.4	.....	2.9	.....
6	Carbon dioxide (CO_2), (calculated)	4	1.5	4	2	2
7	pH	7.6 (7.9)	8.0 (6.8)	7.5	8.1 (7.5)	7.8
8	Colour	35 (75)	25 (50)	25	0 (<5)	50
9	Turbidity	3 (2)	0.5 (3)	0.1	1	0.9
10	Suspended matter, dried at 105°C.	.....	.....	.....	.....	.....
11	Suspended matter, ignited at 550°C.	.....	.....	.....	.....	.....
12	Residue on evaporation, dried at 105°C.	124	108	.....	147	.....
13	Ignition loss at 550°C.	38.4	22.0	.....	9.2	.....
14	Specific conductance, micromhos at 25°C.	164	164	164	242	148
15	Calcium (Ca)	25.8	26.3	28.6	37.5	18.4
16	Magnesium (Mg)	5.0	5.6	5.7	8.2	5.4
17	Iron (Fe) Total	0.02	0.13	0.13	0.03	0.19
18	Dissolved	0.02	0.04	.....	0.03	0.05
19	Manganese (Mn) Total	0.00	0.00	0.00	0.00	0.03
20	Dissolved	.....	.....	.....	.....	0.00
21	Aluminum (Al)	0.0	0.0	.....	0.23	0.02
22	Copper (Cu)	Trace	0.2	.....	Trace	.....
23	Zinc (Zn)	0.0	0.0	.....	0.05	.....
24	Sodium (Na)	1.2	0.9	0.8	1.7	2.9
25	Potassium (K)	0.8	0.4	0.5	0.8	0.4
26	Ammonium (NH_4)	0.1	0.1	.....	0.0	0.0
27	Carbonate (CO_3)	0.0	0.0 (0)	0.0	0.0 (0)	0.0
28	Bicarbonate (HCO_3)	95.4	91.5 (91.5)	92.8	151 (153)	62.4
29	Sulphate (SO_4)	4.8	4.7	10.0	6.9	8.7
30	Chloride (Cl)	1.0	2.0	4.8	1.1	7.7
31	Fluoride (F)	0.0	0.0	0.11	0.0	0.17
32	Phosphate (PO_4) Total	.....	.....	.....	.....	.....
33	Dissolved	.....	.....	.....	.....	.....
34	Nitrate (NO_3)	0.2	3.0	1.0	0.3	0.9
35	Silica (SiO_2), colorimetric	5.9	4.4	3.1	9.7	3.4
36	Carbonate hardness as $CaCO_3$	78.3	75.1	76.1	124	51.2
37	Non-carbonate hardness as $CaCO_3$	6.6	13.5	18.8	3.8	17.0
38	Total hardness as $CaCO_3$	84.9	88.6	94.9	128 (130)	68.2
39	Sum of constituents	91.7	92.6	100	141	78.8
40	Per cent sodium	2.9	2.1	1.8	2.8	8.4
41	Saturation index at test temperature	−0.5	−0.1	−0.6	+0.3	−0.6
42	Stability index at test temperature	8.6	8.2	8.7	7.5	9.4
43	Redox potential (mv)	.....	.....	−494	.....	−483
44	Sodium absorption ratio	.....	.....	0.036	.....	0.153

Remarks:

* *See* also Table II, Station No. 97

TABLE III– (Continued)

Chemical Analyses of Municipal Water Systems

A – Hudson Bay Drainage Basin – Ontario (cont'd)

(In parts per million)

MONTROCK	MOOSE FACTORY				MOOSONEE		
	Moose River				Store Creek		
	Raw water	Finished water			Raw water	Finished water	
	At discharge from filter			At tap	Above dam	At tap	
	July 27/65	Nov. 14/50*	Nov. 15/50*	July 27/65	July 29/65	July 29/65	1
	36:42	10	9	38:42	29:31	29:31	2
	19.4	.....	.....	20.0	11.1	7.2	3
	23.3	19.7	19.7	24.0	23.6	23.6	4
	14.3	.....	.....	.....	23.4	21.7	5
	2	20	15	2	7	6	6
	7.8	6.6	7.0	6.2	7.5	7.5	7
	135	45	180	15	165	165	8
	11	150	20	0.8	6	4	9
	7.5	.....	.....	.....	4.9	3.2	10
	5.9	.....	.....	.....	2.5	0.7	11
	118	.....	.....	.....	304	321	12
	47.6	.....	.....	.....	102	103	13
	161	200	171	212	455	478	14
	23.4	27.3	22.0	26.4	19.6	31.0	15
	4.5	6.6	7.5	5.1	18.5	11.1	16
	3.6	.....	.....	.....	0.65	0.68	17
	0.15	.....	.....	.....	0.06	0.08	18
	0.04	.....	.....	.....	0.00	0.00	19
See Iroquois Falls	0.00	.....	.....	.....	0.00	0.00	20
	0.07	0.6	0.4	.....	0.05	0.07	21
	.....	.....	.....	.....	.....	.....	22
	.....	.....	.....	.....	.....	.....	23
	2.6	.....	.....	.....	50.0	51.5	24
	0.6	.....	.....	.....	3.4	3.3	25
	.....	.....	.....	.....	.....	.....	26
	0.0	0.0	0.0	0.0	0.0	0.0	27
	72.2	54.2	75.9	2.3	127	118	28
	15.6	.....	.....	.....	11.5	11.5	29
	3.8	9.0	7.7	.....	82.0	87.9	30
	0.20	.....	.....	.....	0.37	0.37	31
	<0.1	.....	.....	.....	<0.1	<0.1	32
	.....	.....	.....	.....	.....	.....	33
	0.0	.....	.....	.....	1.6	0.8	34
	2.5	3.9	7.1	.....	3.6	3.7	35
	59.2	44.4	62.2	1.9	104	96.4	36
	17.9	50.9	23.6	84.9	21	26.6	37
	77.1	95.3	85.8	86.8	125	123	38
	88.7	.....	.....	.....	253	260	39
	6.8	.....	.....	.....	46	47	40
	–0.5	–1.8	–1.4	–3.5	–0.7	–0.5	41
	8.8	10	9.7	13	8.9	8.5	42
	.....	.....	.....	.....	.....	.....	43
	0.13	.....	.....	.....	1.95	2.02	44

* Analysis by Dept. of Public Works Testing Laboratories

TABLE III – (Continued)

Chemical Analyses of Municipal Water Systems

A – Hudson Bay Drainage Basin – Ontario (cont'd)

(In parts per million)

	Municipality	MOUNTJOY TOWNSHIP	PORCUPINE	SCHUMACHER	
	Source(s)			Mattagami River	
					Finished water
	Sampling point				At municipal tap
1	Date of sampling				Aug. 11/59
2	Storage period (days)				21:24
3	Sampling temperature, °C.				18.0
4	Test temperature, °C.				26.6
5	Oxygen consumed by $KMnO_4$				11.4
6	Carbon dioxide (CO_2), (calculated)				3
7	pH				7.3 (7.5)
8	Colour				45 (25)
9	Turbidity				3 (7)
10	Suspended matter, dried at 105°C.				.....
11	Suspended matter, ignited at 550°C.				.....
12	Residue on evaporation, dried at 105°C.				74.4
13	Ignition loss at 550°C.				39.2
14	Specific conductance, micromhos at 25°C.				100
15	Calcium (Ca)				12.7
16	Magnesium (Mg)				3.1
17	Iron (Fe) Total				0.16
18	Dissolved				0.08
19	Manganese (Mn) Total	*See* Mattagami Heights	*See* Whitney Township	*See also* Timmins and Table II, Station No. 76	0.02
20	Dissolved				.....
21	Aluminum (Al)				0.0
22	Copper (Cu)				0.3
23	Zinc (Zn)				0.1
24	Sodium (Na)				1.7
25	Potassium (K)				0.6
26	Ammonia (NH_3)				0.2
27	Carbonate (CO_3)				0.0 (0)
28	Bicarbonate (HCO_3)				39.1 (42.7)
29	Sulphate (SO_4)				6.9
30	Chloride (Cl)				6.0
31	Fluoride (F)				0.3
32	Phosphate (PO_4) Total				.....
33	Dissolved				.....
34	Nitrate (NO_4)				0.0
35	Silica (SiO_3), colorimetric				3.9
36	Carbonate hardness as $CaCO_3$				32.1 (35)
37	Non-carbonate hardness as $CaCO_3$				12.3 (10)
38	Total hardness as $CaCO_3$				44.3 (45)
39	Sum of constituents				55.0
40	Per cent sodium				7.4
41	Saturation index at test temperature				−1.5
42	Stability index at test temperature				10
43	Redox potential (mv)				.....
44	Sodium absorption ratio				.....
	Remarks				

TABLE III – (Continued)

Chemical Analyses of Municipal Water Systems

A – Hudson Bay Drainage Basin – Ontario (cont'd)

(In parts per million)

SMOOTH ROCK FALLS			SOUTH PORCUPINE			
Mattagami River			Two wells			
Raw and finished water		Finished water	Well No. 1	Well No. 2	Mixed wells	
			Finished water			
At plant intake	At town tap	At town tap	At pump	At pump	At town tap	
Oct. 25/58	Aug. 12/59	Oct. 12/63	Sept. 16/59	Sept. 15/59	Aug. 13/57	1
10:80	23:29	13:17	7:35	8:36	86:118	2
7.2	19	13.1	7.2	7.2	10.0	3
23.2	24.6	24.9	26.3	26.3	25.0	4
24	12.0	.....	2.5	2.7	2.0	5
4.3	7	9	3	3.5	0.8	6
7.4	7.1 (6.9)	6.9	7.9	7.9	8.5 (7.7)	7
120	55 (65)	90	5	5	5	8
3	2 (5)	2	3	.....	0	9
.....	.....	.....	.....	.....	.....	10
.....	.....	.....	.....	.....	.....	11
98.8	97.2	.....	164	156	155	12
45.2	44.4	.....	16.8	51.2	5.6	13
100	117	115	271	269	263	14
15.5	17.1	15.5	41.6	41.1	41.5	15
4.0	3.9	4.6	8.2	9.3	8.6	16
.....	0.15	0.37	0.16	0.01	.....	17
0.11	0.04	.....	0.04	0.01	0.00	18
0.00	0.00	0.00	0.00	Trace	Trace	19
.....	.....	.....	.....	.....	.....	20
0.0	0.0	.....	0.06	0.06	0.04	21
0.0	0.07	.....	0.0	0.0	Trace	22
0.05	0.0	.....	0.0	0.0	0.1	23
1.2	0.9	0.1	3.4	1.9	3.3	24
0.1	0.6	0.4	0.6	0.6	0.5	25
.....	.....	.....	0.0	0.0	0.0	26
0.0	0.0 (0)	0.0	0.0	0.0	3.6 (0)	27
52.3	56.7 (58.6)	45.1	158	160	158 (150)	28
6.3	7.6	8.2	9.0	8.8	6.8	29
0.7	6.9	5.9	2.5	2.3	2.4	30
0.0	0.0	0.20	1.2	.....	1.0	31
.....	.....	.....	.....	.....	.....	32
.....	.....	.....	.....	.....	.....	33
0.5	0.2	0.7	0.5	0.5	0.3	34
4.4	2.9	3.9	9.5	10	10	35
42.9	46.5 (48)	37.0	130	131	136	36
12.2	12.2 (12)	20.6	7.8	9.9	3.2	37
55.1	58.7 (60)	57.6	138	141	139 (135)	38
58.5	68.1	62.5	154	153	156	39
4.5	3.2	3.3	5.1	2.8	4.9	40
−1.2	−1.4	−1.7	+0.2	+0.3	+0.8	41
9.8	9.9	10	7.5	7.3	6.9	42
.....	.....	−501	.....	.....	.....	43
.....	.....	0.051	.....	.....	.....	44

* *See also* Table II , Station No. 78

TABLE III– (Continued)

Chemical Analyses of Municipal Water Systems

A – Hudson Bay Drainage Basin – Ontario (cont'd)

(In parts per million)

No.					
	Municipality	SOUTH PORCUPINE			
	Source(s)	Two wells			
		Mixed wells			
		Finished water			
	Sampling point	At reservoir			
1	Date of sampling	Nov. 13/57	Feb. 13/58	May 13/58	Sept. 12/58
2	Storage period (days)	8:19	11:18	2:15	6:12
3	Sampling temperature, °C.	8.3	4.4	.....	10.0
4	Test temperature, °C.	25.2	24.9	26.7	23.7
5	Oxygen consumed by $KMnO_4$	2.4	3.4	2.4	.....
6	Carbon dioxide (CO_2), (calculated)	2	2	2	11
7	pH	8.1	8.2	8.1	7.4
8	Colour	10	0.5	5	15
9	Turbidity	0.4	0	0.4	1
10	Suspended matter, dried at 105°C.	.....	.....	.....	.....
11	Suspended matter, ignited at 550°C.	.....	.....	.....	.....
12	Residue on evaporation, dried at 105°C.	174	160	168	174
13	Ignition loss at 550°C.	33.6	24.0	20.4	29.6
14	Specific conductance, micromhos at 25°C.	276	280	272	282
15	Calcium (Ca)	42.2	43.7	42.3	45.0
16	Magnesium (Mg)	9.3	8.0	8.9	8.6
17	Iron (Fe) Total	.....	.....	.....	.....
18	Dissolved	0.00	0.00	0.04	0.01
19	Manganese (Mn) Total	Trace	0.00	0.00	0.00
20	Dissolved	.....	.....	.....	.....
21	Aluminum (Al)	0.0	0.08	0.0	0.0
22	Copper (Cu)	0.0	0.0	0.0	0.0
23	Zinc (Zn)	0.0	0.0	0.0	0.05
24	Sodium (Na)	3.0	2.7	2.8	2.3
25	Potassium (K)	0.6	0.6	0.6	0.6
26	Ammonia (NH_3)	0.0	0.0	0.05	.....
27	Carbonate (CO_3)	0.0	0.0	0.0	0.0
28	Bicarbonate (HCO_3)	170	165	166	174
29	Sulphate (SO_4)	6.9	5.6	6.7	5.5
30	Chloride (Cl)	2.9	3.9	2.1	3.2
31	Fluoride (F)	1.0	1.1	.....	1.0
32	Phosphate (PO_4) Total	.....	.....	.....	.....
33	Dissolved	.....	.....	.....	.....
34	Nitrate (NO_3)	0.2	0.2	0.3	0.1
35	Silica (SiO_2), colorimetric	10	8.0	8.6	9.7
36	Carbonate hardness as $CaCO_3$	140	135	136	143
37	Non-carbonate hardness as $CaCO_3$	3.5	6.8	6.0	5.0
38	Total hardness as $CaCO_3$	143	142	142	148
39	Sum of constituents	160	155	154	162
40	Per cent sodium	4.3	3.9	4.1	3.3
41	Saturation index at test temperature	+0.5	+0.5	+0.4	−0.2
42	Stability index at test temperature	7.1	7.2	7.3	7.8
43	Redox potential (mv)	.....	.....	.....	−563
44	Sodium absorption ratio	.....	.....	.....	.....
	Remarks				

TABLE III – (Continued)

Chemical Analyses of Municipal Water Systems

A – Hudson Bay Drainage Basin – Ontario (cont'd)

(In parts per million)

SOUTH PORCUPINE (concl'd)						
Two wells						
Mixed wells					Finished water	No.
Finished water						
At reservoir					At town tap	
Dec. 15/58	Mar. 10/59	June 11/59	July 20/59	Sept. 15/59	Oct. 15/63	1
15:28	3:21	5:13	4:9	7:36	57:111	2
7.8	5.0	7.2	7.8	.....	11.0	3
21.0	25.5	22.8	28.2	26.3	23.1	4
.....	2.3	1.7	2.4	2.8	.....	5
4	1.5	2	2.5	3	1.5	6
7.8	8.2	8.1	8.0	7.9	8.2	7
5	5	10	0	0	5	8
0	0	.....	0	0	0	9
.....	.....	.....	.....	.....	.....	10
.....	.....	.....	.....	.....	.....	11
171	173	146	167	158	.....	12
30.8	28.0	27.6	24.0	66.0	.....	13
273	289	246	266	270	271	14
42.1	44.7	37.7	40.6	41.2	39.6	15
9.5	9.9	8.2	9.4	9.1	9.9	16
.....	.....	.....	0.05	0.01	0.02	17
0.00	0.11	0.00	0.05	0.01	.....	18
0.02	0.05	0.03	0.00	0.00	0.00	19
.....	.....	.....	.....	.....	.....	20
0.06	0.0	0.01	0.12	0.05	.....	21
0.0	0.0	Trace	Trace	0.0	.....	22
0.0	0.0	0.0	0.0	0.0	.....	23
2.3	2.7	2.4	2.5	2.7	2.6	24
0.5	0.6	0.5	0.6	0.6	0.7	25
0.0	0.0	0.0	0.0	0.0	0.0	26
0.0	0.0	0.0	0.0	0.0	0.0	27
163	170	149	159	160	159	28
7.5	6.4	6.1	7.1	8.5	8.5	29
3.3	3.3	1.6	2.2	2.2	1.5	30
1.0	1.0	1.0	0.9	0.6	1.0	31
.....	0.0	0.0	.....	.....	.....	32
.....	.....	.....	.....	.....	.....	33
0.3	0.1	0.3	0.2	0.4	0.2	34
8.1	9.9	2.1	9.5	10	9.2	35
133	139	122	130	131	131	36
10.6	13.0	6.0	10.0	9.0	8.8	37
144	152	128	140	140	140	38
156	162	133	151	154	152	39
4.7	3.7	3.9	3.7	4.0	3.9	40
0.0	+0.5	+0.3	+0.4	+0.3	+0.5	41
7.8	7.2	7.5	7.2	7.3	7.2	42
.....	.....	.....	.....	.....	−480	43
.....	.....	.....	.....	.....	0.096	44

TABLE III– (Continued)

Chemical Analyses of Municipal Water Systems

A – Hudson Bay Drainage Basin – Ontario (cont'd)

(In parts per million)

No.	Municipality	TIMMINS			TISDALE TOWNSHIP
	Source(s)	Mattagami River			
		Raw and finished water*			
	Sampling point	At town tap			
1	Date of sampling	Aug. 13/57	Aug. 11/59	Oct. 14/63	
2	Storage period (days)	86:118	21:24	56:105	
3	Sampling temperature, °C.	19.2	18	11.0	
4	Test temperature, °C.	25.0	26.7	23.9	
5	Oxygen consumed by $KMnO_4$	9.1	10.4	.....	
6	Carbon dioxide (CO_2) (calculated)	1	3.5	3	
7	pH	7.8	7.2	7.4	
8	Colour	50	40	45	
9	Turbidity	1	2	4	
10	Suspended matter, dried at 105°C.	.....	.....	.....	
11	Suspended matter, ignited at 550°C.	.....	.....	.....	
12	Residue on evaporation, dried at 105°C.	66.4	80.4	.....	
13	Ignition loss at 550°C.	11.2	26.4	.....	
14	Specific conductance, micromhos at 25°C.	97.5	92.4	96.9	
15	Calcium (Ca)	13.7	12.2	12.7	
16	Magnesium (Mg)	2.9	3.1	3.8	
17	Iron (Fe) Total	.....	0.13	0.26	
18	Dissolved	0.06	0.04	.....	
19	Manganese (Mn) Total	Trace	0.01	0.00	*See* South Porcupine and Schumacher
20	Dissolved	.....	.....	0.00	
21	Aluminum (Al)	0.0	0.01	.....	
22	Copper (Cu)	Trace	0.10	.....	
23	Zinc (Zn)	0.05	0.05	.....	
24	Sodium (Na)	1.3	1.0	0.8	
25	Potassium (K)	0.7	0.6	0.3	
26	Ammonia (NH_3)	0.0	.....	0.1	
27	Carbonate (CO_3)	0.0	0.0	0.0	
28	Bicarbonate (HCO_3)	42.2	38.3	41.0	
29	Sulphate (SO_4)	8.4	6.9	7.0	
30	Chloride (Cl)	4.4	4.1	3.3	
31	Fluoride (F)	0.0	0.0	0.14	
32	Phosphate (PO_4) Total	.....	.....	.....	
33	Dissolved	.....	.....	.....	
34	Nitrate (NO_3)	0.2	0.1	0.4	
35	Silica (SiO_2), colorimetric	4.6	3.9	3.3	
36	Carbonate hardness as $CaCO_3$	34.6	31.4	33.6	
37	Non-carbonate hardness as $CaCO_3$	11.5	11.8	13.9	
38	Total hardness as $CaCO_3$	46.1	43.2	47.5	
39	Sum of constituents	57.1	51.0	51.9	
40	Per cent sodium	4.8	4.7	3.5	
41	Saturation index at test temperature	−0.9	−1.6	−1.4	
42	Stability index at test temperature	9.6	10	10	
43	Redox potential (mv)	.....	.....	−491	
44	Sodium absorption ratio	.....	.....	0.051	

Remarks

*See Table II, Station No. 76

TABLE III – (Continued)

Chemical Analyses of Municipal Water Systems

A – Hudson Bay Drainage Basin – Ontario (concl'd)

(In parts per million)

UNIONVILLE	WHITNEY TOWNSHIP				No.
	Well		Bob's Lake		
	Raw and finished water		Raw water		
	At tap in Porcupine		Direct from lake		
	Aug. 11/59	Oct. 15/63	Oct. 15/63		1
	8:24	57:111	53:90		2
	18.0	9.4	13.4		3
	26.6	23.1	23.1		4
	2.8	.....	.....		5
	3	.....	3		6
	8.1	8.3	8.7		7
	0	5	30		8
	0	0	0		9
	.....	.....	.....		10
	.....	.....	.....		11
	255	.....	130		12
	23.6	.....	45.6		13
	416	435	185		14
	64.9	67.4	20.6		15
	15.1	18.1	7.2		16
	0.04	0.03	0.08		17
	0.01	.....	0.01		18
	0.00	0.00	0.00		19
See Kendrey Township and Smooth Rock Falls	.....	0.00	.....		20
	0.18	.....	0.03		21
	0.9	.....	.....		22
	0.1	.....	.....		23
	3.2	3.2	5.9		24
	1.2	1.2	0.6		25
	0.0	.....	0.0		26
	0.0	0.0	0.0		27
	271	283	85.3		28
	9.3	11.6	7.7		29
	0.6	0.5	9.5		30
	0.0	0.10	0.12		31
	.....	.....	0.01		32
	.....	.....	.....		33
	0.2	0.6	0.7		34
	14	13	0.3		35
	222	232	70.0		36
	1.8	10.7	10.9		37
	224	243	80.9		38
	243	255	94.7		39
	3.0	2.8	14		40
	+0.8	+1.0	−0.5		41
	6.5	6.3	8.7		42
	.....	−459	−480		43
	.....	0.089	0.286		44

TABLE III – (Continued)

Chemical Analyses of Municipal Water Supplies

B – Labrador Drainage Basin – Quebec

(In parts per million)

		FORT CHIMO	
		Small pond (Stewart Lake)	Stewart Lake
		Raw and finished water	
1	Date of sampling	Dec. 15/59	
2	Storage period (days)	31-70	
3	Sampling temperature, °C.	1.1	
4	Test temperature, °C.	25.0	
5	Oxygen consumed by $KMnO_4$		
6	Carbon dioxide (CO_2), (calculated)	5.9	
7	pH	7.1	
8	Colour	10	
9	Turbidity	3	
10	Suspended matter, dried at 105°C.		
11	Suspended matter, ignited at 550°C.		
12	Residue on evaporation, dried at 105°C.		
13	Ignition loss at 550°C.		
14	Specific conductance, micrombos at 25°C.	117	
15	Calcium (Ca)	10.0	
16	Magnesium (Mg)	4.4	
17	Iron (Fe) Total	0.52	
18	Dissolved	0.05	
19	Manganese (Mn) Total	0.00	
20	Dissolved		
21	Aluminum (Al)	0.0	
22	Copper (Cu)	0.0	
23	Zinc (Zn)	0.0	
24	Sodium (Na)	4.7	
25	Potassium (K)	1.8	
26	Ammonium (NH_4)	0.1	No data
27	Carbonate (CO_3)	0.0	
28	Bicarbonate (HCO_3)	45.1	
29	Sulphate (SO_4)	10.2	
30	Chloride (Cl)	6.1	
31	Fluoride (F)	0.0	
32	Phosphate (PO_4) Total	0.03	
33	Dissolved		
34	Nitrate (NO_3)	1.0	
35	Silica (SiO_2), colorimetric	8.1	
36	Carbonate hardness as $CaCO_3$	37.0	
37	Non-carbonate hardness as $CaCO_3$	6.0	
38	Total hardness as $CaCO_3$	43.0	
39	Sum of constituents	68.6	
40	Per cent sodium	19	
41	Saturation index at test temperature	1.7	
42	Stability index at test temperature	10.5	
43	Redox potential (mv)		
44	Sodium absorption ratio		
	Remarks		

TABLE III – (Continued)

Chemical Analyses of Municipal Water Supplies

B – Labrador Drainage Basin – Quebec

(In parts per million)

SCHEFFERVILLE			No.
Knob Lake			
Raw water		Finished water	
		At tap	
Jan. 24/62	May 23/62	Jan. 24/62	1
9:12	5:8	9:12	2
1.1	3.3	3.9	3
22.2	22.1	22.1	4
1.9	0	1.4	5
6	4	5	6
7.0	7.1	7.0	7
0	5	0	8
0	0.4	0	9
.....	.....	.....	10
.....	.....	.....	11
34.4	38.4	40.4	12
17.2	9.6	8.4	13
71.1	63.4	70.5	14
6.2	5.5	5.6	15
4.4	4.3	4.7	16
0.04	0.05	0.02	17
Trace	0.01	Trace	18
0.00	0.00	Trace	19
0.00	0.00	Trace	20
Trace	0.0	Trace	21
Trace	0.00	0.04	22
0.00	Trace	<0.05	23
0.4	0.3	0.4	24
0.3	0.2	0.3	25
0.1	0.2	0.0	26
0.0	0.0	0.0	27
32.8	29.3	32.4	28
7.6	6.8	7.2	29
0.4	0.9	1.0	30
0.05	0.12	0.06	31
<0.1	0.03	<0.1	32
<0.1	0.03	<0.1	33
0.0	0.2	0.0	34
1.4	1.6	1.4	35
26.9	24.0	26.6	36
6.7	7.5	6.7	37
33.6	31.5	33.3	38
36.9	30.0	36.7	39
2.5	3.0	2.5	40
−2.2	−2.2	−2.2	41
11	11.5	11	42
.....	.....	.....	43
.....	.....	.....	44

TABLE IV

SMALL COMMUNITY SUPPLIES

TABLE IV

Some Small Community Systems in the Hudson Bay, Labrador and Arctic Drainage Basins

		A - Hudson Bay Drainage Basin			
		Quebec		Ontario	
	(unnamed)	MANITOU – BARVUE MINES* Townsite		AUNOR MINES Townsite	BROULAN REEF MINES Townsite
	Total population served	1965 20 estd (20c)		1963 40 estd	1965 10
	Ownership	Manitou – Barvue Mines Ltd.			Broulan Reef Mines Ltd.
	Source	Sabourin Creek		Reid Lake water purchased from Delnite Mines Ltd.	Porcupine Creek**
	Treatment	Coagulation, filtration, (alum, soda ash, sodium silicate and polyphosphate).			None
	Storage capacity (thousand gal)	Clear well 6.5			One tank 6.0
	Industrial use			Mine and mill	Gold mine
	Sampling point	Raw water	Finished water		Raw and finished water At mine tap
1	Date of sampling	Oct. 12/65	Oct. 12/65		Sept. 17/65
2	Storage period (days)	20:28	20:20		12:17
3	Sampling temperature, °C.	8.3	8.3		.....
4	Test temperature, °C.	23.0	22.1		25.0
5	Oxygen consumed by $KMnO_4$	30.2	.....		11.0
6	Carbon dioxide (CO_2) calculated	6	4		10
7	pH	6.3	6.9		7.3
8	Colour	175	125		110
9	Turbidity	<3	.....		2
10	Suspended matter, dried at 105°C.	.....	.....		.....
11	Suspended matter, ignited at 550°C.	.....	.....		.....
12	Residue on evaporation dried at 105°C.	70.8	.....		400
13	Ignition loss at 550°C.	42.0	.....		91
14	Specific conductance micromhos at 25°C.	38.3	208		570
15	Calcium (Ca)	6.5	7.1		72.0
16	Magnesium (Mg)	1.5	0.8		17.8
17	Iron (Fe) total	0.50	.....		0.20
18	dissolved	0.24	0.06		0.04
19	Manganese (Mn) total	0.00	.....	*See*	0.01
20	dissolved	.....	.....	Delnite Mines	0.00
21	Aluminum (Al)	.....	.....		0.14
22	Copper (Cu)	.....	.....		.....
23	Zinc (Zn)	.....	.....		.....
24	Sodium (Na)	0.8	35.2		18.7
25	Potassium (K)	0.3	.....		5.0
26	Ammonium (NH_3)	.....	.....		.....
27	Carbonate (CO_3)	0.0	0.0		0.0
28	Bicarbonate (HCO_3)	7.4	19.6		123
29	Sulphate (SO_4)	10.9	.....		167
30	Chloride (Cl)	1.3	2.8		15.8
31	Fluoride (F)	0.29	1.1		0.32
32	Phosphate (PO_4) total	0.1	7.3		<0.1
33	Nitrate (NO_3)	0.8	<0.1		1.4
34	Silica (SiO_2) colorimetric	4.8	6.8		3.1
35	Carbonate hardness as $CaCO_3$	6.1	16.1		101
36	Non-carbonate hardness as $CaCO_3$	16.2	4.8		152
37	Total hardness as $CaCO_3$	22.3	20.9		253
38	Sum of constituents	31.2	125		362
39	Per cent sodium	7.2	.....		14
40	Saturation index at test temperature	−3.5	−2.6		−0.3
41	Stability index at test temperature	13	12		7.9
42	Sodium absorption ratio (SAR)	0.07	3.35		0.51
	Remarks	*Formerly Golden Manitou Mines Ltd. Townsite			* Industrial water

TABLE IV – (Continued)

Some Small Community Systems in the Hudson Bay, Labrador and Arctic Drainage Basins

A - Hudson Bay Drainage Basin Ontario						
BROULAN REEF MINES (concl'd) Townsite	BUFFALO ANKERITE MINES Townsite	DELNITE MINES Townsite	HALLNOR MINES Townsite		LITTLE LONGLAC GOLD MINES Townsite	
1965 10	1963 280 estd (136[b])	1963 220* (162[b])	1963 110* (91[b])	1965 85[c]	1963 100 estd	
Broulan Reef Mines Ltd.	Buffalo Ankerite Gold Mines Ltd.*	Delnite Mines Ltd.	Hallnor Mines Ltd. (no organized domestic system)		Privately owned and operated cooperatively	
Hallnor Mine underground water.*	McDonald Lake	Reid Lake, 2½ miles distant.	Underground water 600 feet below surface, a new supply being considered in 1965.		Barron Bay on Lake Kenogamisis	
None	Pumped with chlorination	Pumped with chlorination	Chlorinated		Pumped with chlorination.	
One tank 6.0	None	Elevation tank ..100	Elevation tank 1.0		None	
None	None	Used in mine and mill			None	
Raw and finished water		At townsite tap	Raw water	Finished water	At lake	
At Assay office						
Sept. 17/65 12:17		Oct. 16/63 56:103	Aug. 6/65 4:14	Aug. 6/65 4:14	Oct. 11/63 14:34	1 2
.....		.....	3.3	13.19	11.1	3
24.8		22.9	24.2	24.4	24.9	4
2.0		.....	1.8	1.1	.....	5
17		2	30	20	1.5	6
7.7		7.7	7.4	7.6	8.0	7
25		45	25	15	50	8
15		0	4	3	4	9
.....		.....	2.4	.....	.....	10
.....		.....	2.0	.....	.....	11
990		.....	1,066	982	.....	12
271		.....	308	247	.....	13
1,350		106	1,396	1,382	178	14
170		14.6	177	175	26.0	15
83.7		4.1	89.2	89.6	6.3	16
3.0		0.16	0.09	0.04	.....	17
0.03		.....	0.01	0.01	.....	18
0.70	*See*	0.00	0.98	1.0	.....	19
<0.02	Paymaster Consolidated Mines Townsite	0.00	0.43	0.18	.....	20
0.19		.....	0.24	0.24	.....	21
.....		.....	.....	.....	.....	22
.....		.....	.....	.....	.....	23
18.0		0.7	19.3	18.9	1.4	24
2.4		0.2	2.4	2.4	0.6	25
.....		.....	.....	.....	.....	26
0.0		0.0	0.0	0.0	0.0	27
499		55.5	416	505	97.5	28
353		4.9	370	370	7.7	29
32.5		1.3	31.8	31.6	1.2	30
0.42		0.13	0.31	0.31	.....	31
<0.1		.....	0.1	0.1	.....	32
0.5		0.6	1.4	0.4	1.1	33
16		2.6	13	15	5.1	34
409		45.5	423	414	80.0	35
360		7.7	386	392	11.0	36
769		53.2	809	806	91.0	37
920		56.4	962	952	97.4	38
4.8		2.7	4.9	4.8	3.2	39
+1.0		−0.9	+0.7	+0.9	−0.1	40
5.7		9.5	6.0	5.8	8.2	41
0.28		0.04	0.30	0.29	0.06	42
*Domestic water other than drinking water; drinking water hauled by truck from Porcupine, Ont.	*Mine is not operating	*Includes 40 served in Aunor Mines Townsite	*Includes 10 served at Broulan Reef Mines Ltd. System installed in 1939.			

TABLE IV – (Continued)

Some Small Community Systems in the Hudson Bay, Labrador and Arctic Drainage Basins

		A - Hudson Bay Drainage Basin Ontario			
	COMMUNITY	MOOSONEE RCAF STATION Townsite		PAMOUR GOLD MINES Townsite	PAYMASTER CONSOLIDATED MINES Townsite
	Total population served	1965 500		1963 124 estd (137[b])	1963 270** (60[b])
	Ownership	Department of National Defence		Pamour Gold Mines Ltd.	Paymaster Consolidated Mines Ltd.
	Source	Butler Creek		Three Nations Lake	McDonald Lake
	Treatment	Coagulation, filtration (alum, bicarbonate and activated silica)		Pumped with chlorination	Pumped with chlorination (sodium hypochlorite)
	Storage capacity (thousand gal)	2 reservoirs .....each 100		Elev. tank 103	None
	Industrial use	None		Used in mill and mine for domestic purposes.	Used in mine, mill and domestic purposes.
	Sampling point	Raw water	Finished water After filters	At townsite tap	At townsite tap
1	Date of sampling	June 27/65	June 27/65	Oct. 16/63	Oct. 15/63
2	Storage period (days)	27:28	36:42	54:89	55:90
3	Sampling temperature, °C.	13.3	13.3	16.1	11.1
4	Test temperature, °C.	24.6	24.7	23.2	23.2
5	Oxygen consumed by $KMnO_4$	20.0	4.2	.....	.....
6	Carbon dioxide (CO_2) calculated	12	4	2	2
7	pH	7.5	7.0	7.8	7.9
8	Colour	135	15	50	15
9	Turbidity	3	1	2	0
10	Suspended matter, dried at 105°C.	2.6	.....	.....	.....
11	Suspended matter, ignited at 550°C.	2.2	.....	.....	.....
12	Residue on evaporation, dried at 105°C.	246	258	.....	.....
13	Ignition loss at 550°C.	90.0	86.8	.....	.....
14	Specific conductance, micromhos at 25°C.	342	387	156	184
15	Calcium (Ca)	26.4	26.4	18.3	26.0
16	Magnesium (Mg)	8.5	8.0	6.3	6.3
17	Iron (Fe) total	0.53	0.45	0.24	0.22
18	dissolved	0.08	0.01	0.01	0.02
19	Manganese (Mn) total	0.03	0.03	0.01	0.0
20	dissolved	0.00	0.02	0.00	0.00
21	Aluminum (Al)	0.04	0.13	0.03	0.04
22	Copper (Cu)	.....	.....	.....	.....
23	Zinc (Zn)	.....	.....	.....	.....
24	Sodium (Na)	29.5	32.1	2.7	2.0
25	Potassium (K)	1.8	1.8	0.7	0.3
26	Ammonium (NH_3)	0.1	0.1	.....	.....
27	Carbonate (CO_3)	0.0	0.0	0.0	0.0
28	Bicarbonate (HCO_3)	80.9	27.5	55.7	94.8
29	Sulphate (SO_4)	14.1	62.9	20.2	8.8
30	Chloride (Cl)	60.0	58.8	4.9	4.2
31	Fluoride (F)	0.26	0.09	0.20	0.11
32	Phosphate (PO_4) total	<0.2	<0.1	0.14	0.0
33	Nitrate (NO_3)	0.0	0.2	1.0	1.0
34	Silica (SiO_2) colorimetric	3.1	3.9	2.4	3.0
35	Carbonate hardness as $CaCO_3$	66.4	22.6	45.7	77.8
36	Non-carbonate hardness as $CaCO_3$	34.6	76.3	25.9	13.2
37	Total hardness as $CaCO_3$	101	98.9	71.6	91.0
38	Sum of constituents	184	208	84.2	98.5
39	Per cent sodium	38	41	7.5	4.5
40	Saturation index at test temperature	−0.7	−0.7	−0.7	−0.2
41	Stability index at test temperature	8.9	10.4	9.2	8.3
42	Sodium absorption ration (SAR)	1.27	1.40	0.14	0.09
	Remarks				*In 1964, name changed to Porcupine Paymaster Ltd. ** 20 people near mine shaft use underground water rather than Mc Donald Lake.

[a] Population according to the Tenth Census of Canada, 1956.
[b] Population according to the Eleventh Census of Canada, 1961.
[c] Total population reported by the community for the year as shown.

TABLE IV – (Continued)

Some Small Community Systems in the Hudson Bay, Labrador and Arctic Drainage Basins

A - Hudson Bay Drainage Basin Ontario			C - Arctic Drainage Basin Northwest Territories			
PRESTON MINES Townsite			ALERT, ELLESMERE ISLAND			
1963			1961			
105 estd* (55[b])			(9[a]) (31[b])			
Preston Mines Ltd.			Department of National Defence*			
Simpson Lake and artesian well, 90 ft deep.			Upper Dumbell Lake			
Simpson Lake water pumped with chlorination.			Filtration and chlorination			
Elev. tank (well water) ..... 83 Elev. tank (lake water) 180			No data			
Well water used in mine			None			
Simpson Lake		Well	Raw water			
At lake	At tap	At tap				
Oct. 15/63	Oct. 15/63	Oct. 15/63	July 27/60	Sept. 13/60	Aug. 28/63	1
15:23	15:23	57:90	15:23	17:22	15:21	2
12.2	10.1	16.7	4.4	5.6	3.3	3
24.0	23.8	23.0	24.0	22.2	23.4	4
.....	.....	.....	.....	.....	.....	5
5	4	5	2	2	3	6
7.5	7.6	8.0	8.1	8.0	7.9	7
15	15	5	.....	.....	0	8
5	2	0.9	.....	45	0	9
.....	.....	.....	.....	.....	.....	10
.....	.....	.....	.....	.....	.....	11
.....	.....	.....	.....	.....	120	12
.....	.....	.....	.....	.....	50.8	13
.....	.....	.....	.....	.....	216	14
537	544	634	213	224	30.2	15
49.8	49.2	77.4	.....	33.4	5.9	16
22.3	21.9	28.8	.....	5.9	0.01	17
0.45	0.15	0.88	0.00	0.44	Trace	18
.....	.....	0.00	.....	.....	0.00	19
0.14	0.06	0.13	0.00	0.10	0.00	20
.....	.....	0.00	.....	Trace	0.02	21
.....	.....	0.10	.....	.....	.....	22
.....	0.04	.....	.....	.....	0.00	23
.....	0.16	.....	.....	0.02	4.4	24
23.5	23.5	16.5	4.4	4.4	0.5	25
3.5	3.5	3.0	0.9	0.5	0.0	26
.....	.....	.....	.....	0.1	0.0	27
0.0	0.0	0.0	0.0	0.0	118	28
107	107	298	128	126	2.8	29
16.1	159	91.4	2.7	3.2	6.8	30
11.5	11.6	6.1	9.8	7.3	0.0	31
0.19	0.16	0.20	.....	0.0	0.0	32
.....	.....	0.47	.....	.....	0.0	33
2.5	0.9	0.2	0.6	0.0	0.8	34
0.4	0.4	16	1.2	1.4	96.7	35
87.9	88.1	245	105	104	3.0	36
128	125	67	0.6	2.8	99.7	37
216	213	312	106	107	109	38
327	323	386	.....	118	8.7	39
18	19	10	8.2	8.1	−0.1	40
−0.3	−0.2	−0.3	.....	+0.1	8.1	41
8.1	8.0	8.1	.....	7.8	0.19	42
0.70	0.48	0.70	.....	.....	.....	

*50 served with lake water; 55 with well water.

*Treatment plant was installed in 1965.

TABLE IV – (Continued)

Some Small Community Systems in the Hudson Bay, Labrador and Arctic Drainage Basins

	C - Arctic Drainage Basin Northwest Territories			
COMMUNITY	ALERT, ELLESMERE ISLAND (concl'd)			CAMBRIDGE BAY
Total population served	1961 - (9[a]) (31[b])			1961-63 140 estd (798[a])(531[b])(250[c])
Ownership	Department of National Defence*			Department of Northern Affairs and National Resources*.
Source	Upper Dumbell Lake			Grenier River and Water Supply Lake.
Treatment	Filtration and chlorination			Chlorinated in trucks and hauled to buildings.*
Storage capacity (thousand gal)	No data			Small tanks in buildings
Industrial use	None			None
Sampling point	Finished water			Grenier River
	Wireless Station	At building taps		
1 Date of sampling	Mar. 14/59	July 27/60	Sept. 13/60	Sept. 13/65
2 Storage period (days)	26:33	15:23	17:22	30:32
3 Sampling temperature °C.		15.6	23.9	0.0
4 Test temperature, °C	25.6	23.8	22.3	23.8
5 Oxygen consumed by $KMnO_4$				2.3
6 Carbon dioxide (CO_2) calculated		3	2	4
7 pH	8.3	7.8	7.9	7.4
8 Colour	0	8	15	15
9 Turbidity	Clear	3	5	0.5
10 Suspended matter, dried at 105°C.				
11 Suspended matter, ignited at 550°C.				
12 Residue on evaporation, dried at 105°C.				81.6
13 Ignition loss at 550°C.				43.2
14 Specific conductance, micromhos at 25°C.	253	163	186	142
15 Calcium (Ca)	38.5		27.1	9.8
16 Magnesium (Mg)	7.5		5.7	8.5
17 Iron (Fe) total		0.01	0.81	0.27
18 dissolved	0.02			<0.01
19 Manganese (Mn) total		0.05	0.10	0.00
20 dissolved	0.01		0.05	0.00
21 Aluminum (Al)	0.02	0.05		0.03
22 Copper (Cu)		0.02		
23 Zinc (Zn)		0.05	0.05	
24 Sodium (Na)	5.7	3.7	4.1	4.7
25 Potassium (K)	0.7	0.6	0.5	0.8
26 Ammonium (NH_3)	0.05	0.0	0.05	
27 Carbonate (CO_3)	0.0	0.0	0.0	0.0
28 Bicarbonate (HCO_3)	148	88.7	104	66.2
29 Sulphate (SO_4)	4.0	3.4	3.5	3.0
30 Chloride (Cl)	9.1	6.9	7.7	9.6
31 Fluoride (F)	0.0		0.0	0.06
32 Phosphate (PO_4) total				<0.1
33 Nitrate (NO_3)	0.0	0.4	0.0	1.0
34 Silica (SiO_2) colorimetric	4.4	0.7	1.0	0.4
35 Carbonate hardness as $CaCO_3$	121	72.8	85.3	54.3
36 Non-carbonate hardness as $CaCO_3$	5.8	4.7	5.3	5.3
37 Total hardness as $CaCO_3$	127	77.5	90.6	59.6
38 Sum of constituents	143		101	70.5
39 Per cent sodium	8.8	9.2	8.8	14
40 Saturation index at test temperature	+0.5		-0.2	-1.3
41 Stability index at test temperature	8.8		8.3	10
42 Sodium absorption radio (SAR)				0.26
Remarks				* The water hauling and treating equipment owned and operated by F.H. Ross and Associates.

[a] Population according to the Tenth Census of Canada, 1956.
[b] Population according to the Eleventh Census of Canada, 1961.
[c] Total population reported by the community for the hear as shown.

TABLE IV – (Concluded)

Some Small Community Systems in the Hudson Bay, Labrador and Arctic Drainage Basins

C - Arctic Drainage Basin
Northwest Territories

CAMBRIDGE BAY (concl'd)	FROBISHER BAY (BAFFIN ISLAND)			RESOLUTE (CORNWALLIS ISLAND)		
1965	1961-63		1965	1963		
300 (500[c])	1750* (351[a]) (512[b]) (1900[c])		500* (1,500[c])	100 estd (75[a]) (153[b])		
Department of Northern Affairs and National Resources*.	Department of Transport	Department of Northern Affairs and National Resources.**		Department of National Defence*		
Grenier River and Water Supply Lake	In 1961, small pond 2 miles from settlement. In 1962-63 Lake Catherine: Sylvia Grennel River is an auxiliary source.	Lake Geraldine		Lake (½ mile long and ¼ mile wide)		
Chlorinated in trucks and hauled to buildings.*	None; hauled by tank truck to settlement.	Coagulation, filtration, sterilization (alum sodium, aluminate, activated silica, lime and ozone).		Ion exchange softening and chlorination		
Small tanks in buildings.	Small tanks in building.	Concrete tank 124		No data		
None	None	Power plant, hospital and laundry.		No data		
Water Supply Lake	Raw and finished water, at pond	Raw water	Finished water	At lake	At tap	
		Intake line	Laboratory tap			
Sept. 13/65	Sept. 23/57	July 28/65	July 28/65	about Sept. /54	Aug. 6/63	1
30:32	112:116	29:34	30:34		9:14	2
1.7	.....	11.1	16.5		.....	3
23.9	23.7	23.6	23.6		24.2	4
3.5	3.3	1.7	0.6		.....	5
5	0.9	2	2		2.2	6
7.6	7.6	6.9	7.1		7.9	7
25	14	15	15		5	8
1	0.7	2	1		0	9
.....	.....	.....	.....	.....	.....	10
.....	.....	.....	.....	.....	.....	11
176	50.4	15.2	39.2		.....	12
64	25.2	3.2	15.2		.....	13
295	51.8	25.8	74.4		362	14
20.9	7.3	3.6	8.2		32.4	15
15.5	1.2	0.6	0.7		10.7	16
0.06	.....	0.52	0.07		0.03	17
<0.01	Trace	<0.01	.....		.....	18
0.02	.....	0.02	0.00		0.00	19
0.00	0.00	0.00	0.00		.....	20
0.05	0.06	0.08	0.06		.....	21
.....	Trace	.....	.....		.....	22
.....	0.0	.....	.....		0.0	23
14.5	0.8	0.6	4.2	8.4	19.5	24
2.3	0.3	0.1	0.3	1.6	1.5	25
.....	0.0	0.2	0.4		.....	26
0.0	0.0	0.0	0.0		0.0	27
120	22.7	10.0	15.8		102	28
6.2	4.9	2.1	16.4	55	39	29
34.0	1.7	0.9	1.7	11	33	30
0.12	0.0	0.01	0.03		0.13	31
<0.1	.....	0.1	0.1		.....	32
0.4	0.0	0.0	0.6		Trace	33
1.8	3.3	0.6	1.0		0.5	34
98.7	18.6	8.2	13.0		83.7	35
17.3	4.6	3.4	10.3		41.1	36
116	23.2	11.6	23.3		125	37
155	30.7	13.3	41.0		187	38
21	6.8	10	28		25	39
−0.5	−1.6	−3.0	−2.2		−0.1	40
8.6	11	13	12		8.1	41
0.59	.....	0.08	0.38		0.76	42

* The water hauling and treating equipment owned and operated by F.H. Ross and Associates

Lake Catherine replaced the small pond source about 1962. No pumping system, hauled by truck.

*Served by new system installed May 4, 1964.
**System operated by Northern Canada Power Commission.

*A Department of Transport base is located 3 miles distant and an Eskimo village 4 miles distant.

DISCUSSION

The drainage basins covered by this report represent about 46 per cent of the total area of Canada, but they contained little more than one per cent of Canada's population in 1961. They extend over 1,780,047 square miles, with 46 per cent in the Arctic drainage basin, 40 per cent in the Hudson Bay basin and 14 per cent in the Labrador basin. Of the 251,173 inhabitants in 1961, some three per cent were in the Arctic basin, 90 per cent in the Hudson Bay basin and about seven per cent in the Labrador basin.

These drainage basins cross several provincial and territorial boundaries: 57 per cent of the area is in the Northwest Territories, 20 per cent in Quebec, 12.4 per cent in Ontario, 5.7 per cent in Labrador, 4.4 per cent in Manitoba, 0.4 per cent in the Yukon and 0.1 per cent in Saskatchewan. The distribution of population in 1961 was Labrador 5 per cent, Quebec 43 per cent, Ontario 47 per cent, Manitoba 1.5 per cent and Northwest Territories 3.5 per cent. Saskatchewan and the Yukon were not represented in the population chart for 1961.

More than one physiographic region is considered. The Hudson Bay basin is mainly on the Canadian Shield, with part in the Hudson Bay lowlands of Northern Ontario. The Labrador drainage basin is completely in the Canadian Shield. The southern area of the Arctic drainage basin lies on the Canadian Shield, with a minor part in the Grenville region. Geological and climatic conditions are much the same in each of these physiographic regions.

It is believed that most of the surface waters which were not studied are generally similar in quality to the nearby waters reported in Table II. Some differences in the chemical quality of surface waters in some watersheds are shown in the table, but in most cases these are readily attributable to local geological and climatic conditions, or to human activities such as industrial contamination, agriculture or municipal discharges. However, the differences are minor as far as overall quality and water use are concerned.

No attempt is made in this report to discuss in detail the data of Table II. A statistical study of at least some of the data might be useful, not only in determining the mean or median quality, but possibly in extrapolating quality to other periods of time and season. This type of study was hindered by a lack of discharge records at many sampling points and the influence of regulating dams at other points, coupled with the fact that a survey such as this had to be carried out over several years and was not designed for statistical evaluation.

Table II shows that the major surface waters in the Hudson Bay drainage basin range from very soft to medium hard, when classified as follows:

Classification	Total Hardness as $CaCO_3$ (parts per million)
Very Soft	Up to and including 30
Soft	31 to 60
Medium Hard	61 to 120
Hard	121 to 180
Very Hard	greater than 180

The surface waters in the Hudson Bay basin are typical of the Canadian Shield; they are seldom high in mineral content or harder than 120 p.p.m. of $CaCO_3$. The waters in the northern forested areas are for the most part very soft, while those in the southern areas are usually medium hard, due principally to the clay belt areas of Northern Ontario and Northern Quebec.

The mineral content of surface waters of the basin is mostly carbonate hardness, i.e., the bicarbonates of calcium and magnesium. These waters are low in alkalis, sulphates and chlorides; they have markedly negative saturation indices, and are corrosive through being usually saturated with oxygen. The total mineral content of uncontaminated waters is seldom above 100 p.p.m., and is generally in the range of 50-75 p.p.m., or even lower. Their quality is characteristic of waters of the Canadian Shield, where between 80 and 98 per cent of the dissolved mineral content (as equivalents per million) is alkaline earth salts. Surface waters rising and flowing through the Canadian Shield are seldom turbid, but are often highly coloured.

Table II shows that surface waters in the Arctic drainage basin range from very soft to very hard, depending upon the districts in which the survey parties were working. Because of the remoteness of the area and the sparsity of settlements, a planned water quality network in the far north was impossible. Most of the data resulted from samples collected by government agencies working on special research projects, and the type of sample reflected the scope and type of the study. For example, water samples were obtained from research groups studying the Arctic.

Although water quality data are limited because samples were obtained from only a few of the Arctic islands, those that were received indicated a high content of alkaline earth bicarbonates. The influence of sea water was shown by the high sodium chloride content of some ponds and streams. The high sulphate waters on some islands in the north are due essentially to calcium sulphate, and not to alkali (sodium) sulphate waters like those of the lowland regions of southern Canada. This is the result of glaciers and snowmelts dissolving gypsum outcrops, and is particularly noticeable in Ellef Ringnes Island, where gypsum domes occur.

SUMMARY

Surface waters in the Hudson Bay drainage basin are typical of the Canadian Shield. They vary from very soft water occurring mainly in the northern forested areas to medium hard water, which is usually found in southern areas. These waters seldom have a high mineral content and are seldom harder than 100 p.p.m. of $CaCO_3$.

In the northern Quebec region of the Labrador drainage basin, waters are rated as soft. Municipal water supplies averaged slightly over 30 p.p.m. of $CaCO_3$. The samples from Labrador itself are in the very soft range.

Surface waters in the Arctic drainage basin vary from very soft to very hard. The collection of samples depended on government agencies working on special projects confined to a few Arctic islands.

The mineral content of surface waters in the Hudson Bay basin consists mainly of calcium and magnesium bicarbonates. The waters are correspondingly low in alkalis, sulphates and chlorides. Samples from the Arctic islands show a high content of alkaline earth bicarbonates. Some ponds and streams indicate the influence of sea water in their high sodium chloride content.

The greater part of the data collected in this study came from sampling stations and municipal water supplies in the Hudson Bay drainage basin. This reflects the concentration of 47 per cent of the study area's population in Ontario and 43 per cent in Quebec, which make up a large part of the basin. Data were inevitably more difficult to gather in the remoter and more sparsely populated regions.

Colour is high in many of the far northern waters, especially in the Arctic coastal plains. Many ponds on Ellesmere Island have very high sodium and potassium contents. These ponds vary markedly in quality over a period of three to four months. Lakes and ponds in the far north are usually shallow and freeze solid in winter. Where this is not the case, water quality deteriorates considerably. A very high proportion of silt and turbidity is noted beneath the icecap, which varies in thickness from seven to eight feet. As the small glacier-fed streams run for just a short period or periods of the year, the proportion can only be gauged in the large rivers, where the water flow continues over an appreciable part of the year.

TABLE V

MUNICIPAL SYSTEMS, TREATMENT AND POPULATION SERVED

TABLE VI

MUNICIPAL WATER HARDNESS

TABLE V

Municipal Systems, Treatment and Population Served in 1961

Drainage Basin	Province or Territory	Total Population	Number of communities and estimated population served with water					Number of systems (sources) and estimated population served with water classed as				
			Cities, Towns and Villages	Township, Improvement Districts	Townsites and Unincorporated Communities	Small Mines, Townsites, etc.	Totals					
Hudson Bay	Manitoba	[illegible]	5	0	3	0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	Ontario	[illegible]	5 49,735	0 –	8 [illegible]	2 [illegible]	15 [illegible]	[illegible]	[illegible]	4 [illegible]	1 [illegible]	[illegible]
	Quebec	119,114	8 [illegible]	0 8,300	12 15,175	8 [illegible]	[illegible]	[illegible]	1 [illegible]	4 4,445	2 –	[illegible]
	Northwest Territories	[illegible]	0 –	0 –	1 700	0 –	1 700	–	–	1 700	–	–
Labrador	Labrador	[illegible]	0	0	0	0	0	0	0	0	0	0
	Quebec	[illegible]	0 –	0 –	2 [illegible]	0 –	2 [illegible]	0	0	2 [illegible]	0	[illegible]
Arctic	Northwest Territories	[illegible]	0 –	0 –	4 2,000	0 –	4 2,000	0 –	1 –	4 2,000	0	4 [illegible]
Totals		251,373	17 67,435	8 8,300	25 25,705	9 1,360	59 102,800	37 51,865	6 42,260	10 12,025	3 2,250	13 [illegible]

† Not included in statistics of this table
(a) Included privately-owned sources from which municipality purchases water.

TABLE VI

Municipal Water Hardness in Hudson Bay, Labrador and Arctic Drainage Basins in 1961

Drainage Basin	Province or Territory	Number of community systems and estimated population served with water					Number of systems (sources) and estimated population served with water classed as			
		Cities, Towns and Villages	Township, Improvement Districts	Townsites and Unincorporated Communities	Small Mines, Townsites, etc.	Totals	[illegible]	[illegible]	[illegible]	[illegible]
Hudson Bay	Manitoba	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	Ontario	8 49,735	5 7,950	[illegible]	8 1,340	20 [illegible]	[illegible]	8 20,065	4 [illegible]	2 [illegible]
	Quebec	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	Northwest Territories	0	0	1 700	0	1 700	0	1 700	0	0
Labrador	Labrador	0	0	0	0	0	0	0	0	0
	Quebec	0	0	2 [illegible]	0	2 [illegible]	2 [illegible]	0	0	0
Arctic	Northwest Territories	0	0	4 2,000	0	4 2,000	[illegible]	2 [illegible]	[illegible]	0
Totals		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

† Not included in statistics of this table

TABLE V

Municipal Systems, Treatment and Population Served in 1961

Water sources and estimated population served by			No. of water systems and estimated population served with water treated as follows			Percentage of population served, using		Per cent of total basin population served by system		
Ground water	Surface water	Mixed water	No treatment	Chlorination	Additional treatment	Surface and Mixed water	Untreated waters	Surface and Mixed waters	Ground waters	Total
–	–	–	–	–	–	–	–	0	0	0
7 26,350	7 9,060	1 6,850	3 11,000	4 24,160	3 7,100	38	26	34	6.7	41
4 12,425	15 59,385	1 1,050	1 1,100	13 53,285	6 18,475	83	1.5	51	10	61
0 –	1 700	0 –	0 –	1 700	0 –	100	0	35	0	35
0	0	0	0	0	0	0	0	0	0	0
0 –	2 3,600	0 –	1 400	0	1 3,200	100	11	71	0	71
0 –	4 2,020	0 –	1 1,750	1 140	2 130	100	87	29	0	29
11 38,775	29 74,765	2 7,900	6 14,250	24 78,285	12 28,905	68	12	33	15	48

TABLE VI

Municipal Water Hardness in Hudson Bay, Labrador and Arctic Drainage Basins in 1961

Percentage population served with water classed as				Weighted hardness, as ppm $CaCO_3$, of municipal water							
Soft	Medium Hard	Hard	Very Hard	Cities, Towns, and Villages	Townships, Improvement Districts	Townsites and Unincorporated Communities	Small Mine Townsites	Ground water	Surface water	Mixed water	Total basins
53.3	35.1	0	11.6	79	–	37	21	100	39	25	75
52.9	27.5	15.7	3.9	75	104	95	96	157	68	57	82
–	100	–	–	–	–	90	–	–	90	–	90
–	–	–	–	–	–	–	–	–	–	–	–
100	–	–	–	–	34	34	–	–	34	–	34
86.6	8.4	4.9	0	–	–	37	–	–	37	–	37
54.7	29.5	9.4	6.4	77	104	72	95	118	67	29	78

APPENDIX A

Surface Water Sampling Locations

APPENDIX A

Surface Water Sampling Locations

APPENDIX A

Surface Water Sampling Locations

ARCTIC DRAINAGE BASIN

APPENDIX A

Surface Water Sampling Locations

LABRADOR DRAINAGE BASIN

APPENDIX A

Surface Water Sampling Locations

APPENDIX B

Index to Data and Analyses - by Municipality

Index to Data and Analyses - by Municipality

APPENDIX C

Index to Data and Analyses - by Small Communities and Townsites

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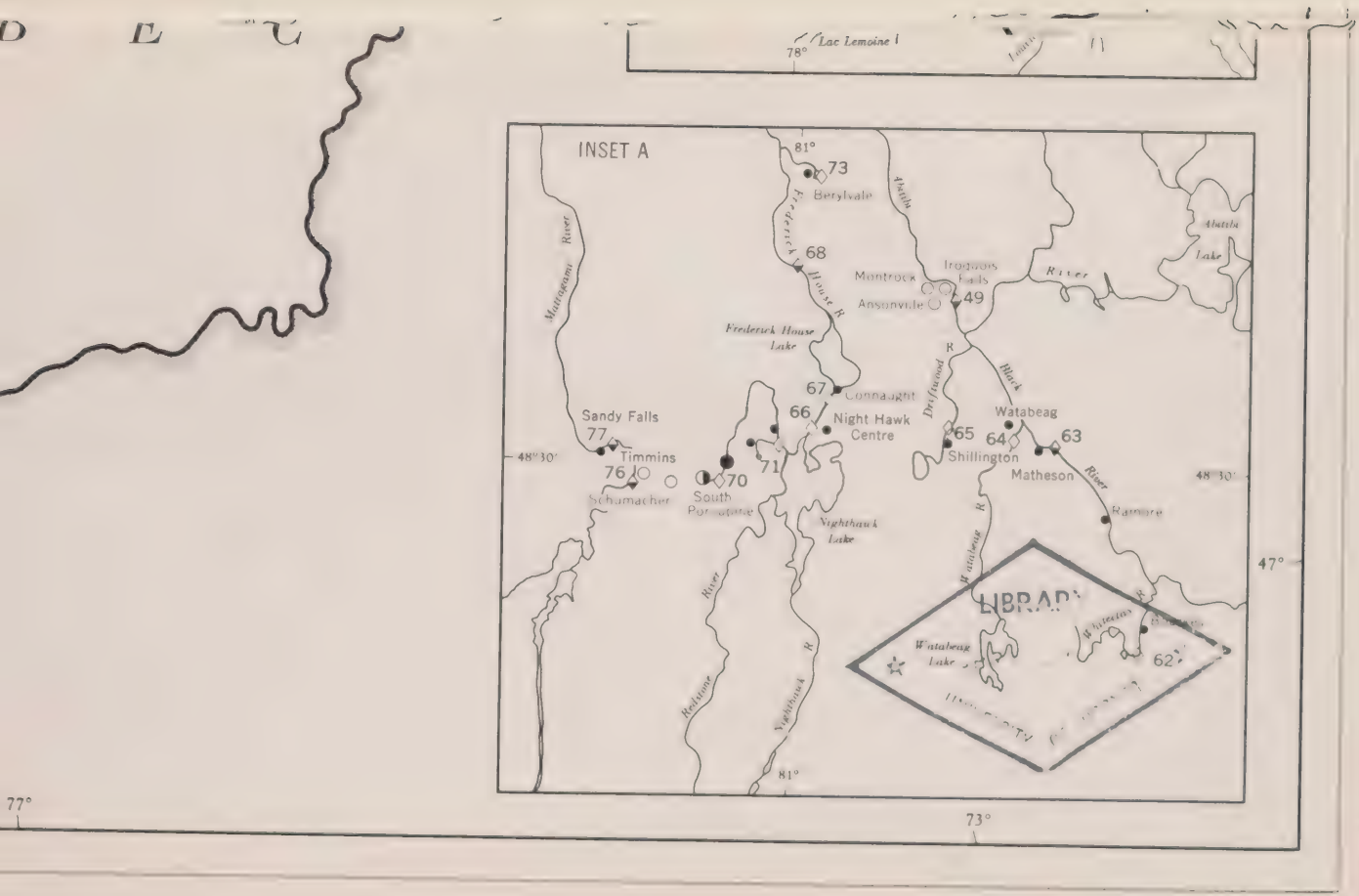
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Lac Lemoine I
78°
81°
73
Berylvale
Frederick House R
68
Montrock
Ansonville
Iroquois Falls
49
Abitibi River
Abitibi Lake
Mattagami River
Frederick House Lake
67
Connaught
66
Night Hawk Centre
Driftwood R
Black R
Watabeag
65
64
63
Shillington
Matheson
Sandy Falls
77
Timmins
76
Schumacher
70
South Porcupine
71
48°30'
Nighthawk Lake
Redstone River
Nighthawk R
Mattagami R
Ramore
47°
Watabeag Lake
62
77°
73°

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